



**ROUTLEDGE'S**

**GUIDE**

THROUGH THE

**GREAT EXHIBITION,**

Containing a Description of

Every Principal Object of Interest,

**WITH A PLAN,**

Pointing out the easiest and most systematic way  
of examining the Contents of

**THE CRYSTAL PALACE.**

**ONE SHILLING**

LONDON:

GEORGE ROUTLEDGE & CO.,

35, SOHO SQUARE.



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A GUIDE  
TO THE  
GREAT EXHIBITION.

To Theophilus from Henrietta  
as a memento of our visit.

1887.

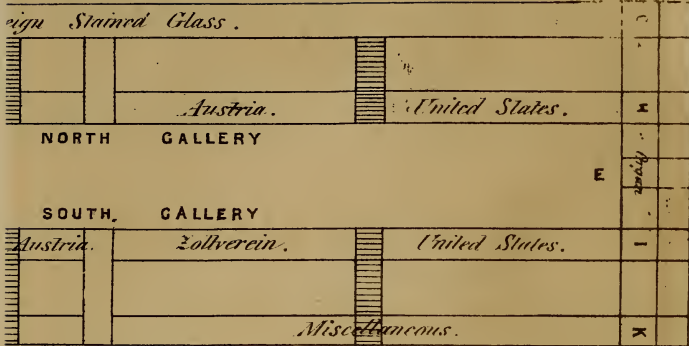
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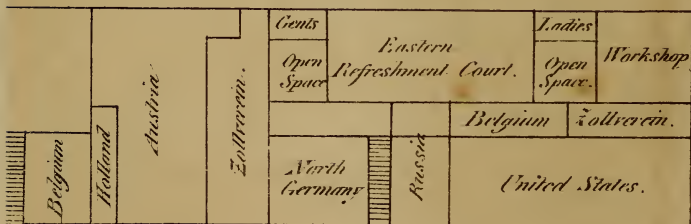
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GALLERY

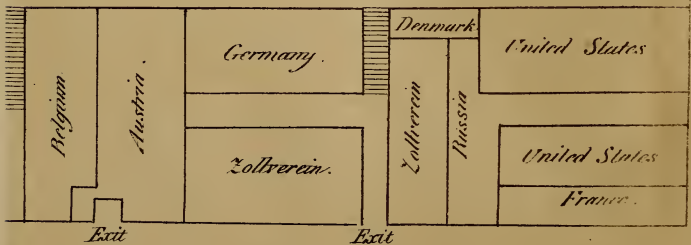


GALLERY



EASTERN NAVE

EAST





# A GUIDE

TO

## THE GREAT EXHIBITION ;

CONTAINING A DESCRIPTION OF EVERY

PRINCIPAL OBJECT OF INTEREST.

With a Plan,

POINTING OUT THE EASIEST AND MOST SYSTEMATIC WAY OF  
EXAMINING THE CONTENTS OF

THE CRYSTAL PALACE.

L O N D O N :

GEORGE ROUTLEDGE AND CO., SOHO SQUARE.

1851.



## P R E F A C E.

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THE volume now submitted to the notice of the reader is, with the exception of some of the introductory matter, almost entirely different from the work lately issued by the publishers on the same subject. Its object is to supply an obvious deficiency in the existing catalogues, namely, the *whereabouts* of some of the most striking and interesting articles exhibited. The materials for it have been collected by the patient and unremitting exertions of more than one person, and their systematic arrangement, interspersed with remarks suggested from time to time by the variety and remarkable features of particular objects, will, it is hoped, prove at once entertaining and instructive.

To attempt a complete descriptive analysis of the contents of this Display of Nations in the limits of a volume like the present, would have been hopelessly unreasonable. Selection has, therefore, become the important and responsible duty of its editor, and no one man can presume on having made the best choice in all cases.

There is, nevertheless, strong reason to believe that this little *brochure* will serve as an acceptable landmark to those who wish to visit the Exhibition without spending half their time in running about in quest of some undefined object, as well as to find a resting-place

for their memories when they get home. The plan pursued was, after repeated visits, found less intricate, and yet more comprehensive, than any other yet suggested; and the advantage of telling people where they will see something, instead of sending them to see something they know not where, will, it is confidently expected, be confessed by many of our readers.

Sincerely hoping that this little book may relieve some few persons from the bewilderment which appears to follow the Oriental dream of splendour to which the Exhibition at present gives rise, and that its pages may prove a comfortable guide to a few adventurers through the crystal mazes, we leave it to their own experience to criticise.

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# THE GREAT EXHIBITION :

## ITS PALACE AND ITS PRINCIPAL CONTENTS.

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THE great Industrial Exhibition of 1851 will stand out in history as one of the most important events in the progress of society. No other event, up to this period, has extended its interest over so large a surface of the globe, or engaged the anxious thoughts of so many of the human family. In every quarter of the world, men will have been employed in making preparations, collecting materials, and taxing their ingenuity and skill to compete in this mighty and peaceful contest. Millions of men, women, and children compose the armies in this battle of production, and thousands and thousands, throngs from all grades of society, will witness it, to derive gratification and benefit in a great variety of forms, while it will be presented to still greater numbers by the aid of pictures, by descriptions in the languages of the principal nations, and by each eyewitness becoming, as it were, a lecturer upon what he has seen, when he returns to his own country. Indeed, as far as civilization extends, there will hardly be a nook so obscure or a person so ignorant, as not to have heard something of this huge show. Besides the incalculable influence it must exercise on the taste, skill, knowledge, and commerce of the world, it will probably go far towards the suppression of wars; and it may be considered with very great propriety as the first real peace congress of the world, since nearly all the

principal powers of the earth will be represented, in many instances by the most eminent men in politics, science, literature, arts, manufactures, commerce, and skilled labour.

As Englishmen, we are proud that this great World's Fair takes place in our metropolis, and, as philanthropists, we are glad that it is so, because no other place would, perhaps, have afforded so many facilities for making so gigantic an experiment; indeed, no ordinary city could even provide accommodation for the vast congregation of visitors. But it is to our neighbours across the Channel that we must yield the honour of having originated and developed great Industrial Exhibitions, properly so called, gradually extending them from a local to a truly national character, and, by the exercise of the most liberal and enlightened views, succeeding in holding them upon a grand scale, and in giving them immense importance. This is very evident, from the able report of Mr. Digby Wyatt to the Society of Arts, after his mission to the French Exposition of 1849. In 1757, during the first French revolution, the Marquis d'Aveze, upon being appointed Commissioner of the late Royal Manufactories of the Gobelins, of Sévres, and of the Savonnerie, found that two years of neglect had reduced the workmen almost to starvation, while it had left the warehouses full of their choicest productions. To remedy these evils, he conceived the idea of using the chateau of St. Cloud, then uninhabited, as a bazaar for the exhibition and disposal, by lottery, of the large stock of tapestry, china, and carpets on hand in these establishments. He immediately obtained the consent of the government to his proposal, and, in a few days, says the Marquis, in his own account of his efforts, the walls of every apartment in the Castle were hung with the finest Gobelin tapestry; the floors covered with the superb carpets of the Savonnerie, which long rivalled the carpets of Turkey, and latterly far surpassed them; and the saloons decorated with the large and beautiful vases, the magnificent groups, and the exquisite pictures of Sévres china. The Chamber of Mars was converted into a receptacle for every kind of the most



beautiful services of porcelain, with a wheel of fortune in the centre of the saloon, containing tickets for the lotteries intended to be drawn. To relieve the immediate necessities of the workmen, the Marquis procured funds, by allowing a few persons to make purchases while he was pushing on his arrangements for the exhibition, but on the very day fixed for opening the bazaar, a decree of the Directory, banishing the nobility, obliged him to fly, and the project for the time failed, after having been seen only by a few of the higher classes.

What he had done, however, in his first effort as Commissioner of the three Government Manufactories, led the Marquis to think that, by similar means, he might accomplish great benefits for the higher manufactures and fine arts of his country; accordingly, on his return from banishment to Paris, in the commencement of the year 1798, he at once resumed his labours. On this second occasion the objects he collected were distributed in the house and gardens of the Maison d'Orsay, Rue de Varennes. In looking over the list of specimens which composed this exhibition, we must be struck by its entirely aristocratic nature. The richest furniture and *marqueterie* produced by Boule, Riessner, and Jacob; the finest clocks and watches by L'Epine and Leroy; the superb porcelain and china from the manufactories of Sévres, of Angoulême, and of Nast; the most elegant books, bound in the richest manners, and fully supporting the traditional excellence of Grolier and De Thou; silks of Lyons; historical pictures by Vincent, David, and Suvé; landscapes by Hue and Valenciennes; flowers by Vandael and Van Pankouck; and many other objects of an equally luxurious character, served to show upon what class of the community French manufacture had, up to the period of the Revolution, mainly depended for support. In the further progress and development of these expositions, we shall be able to trace the gradual expansion of the market and adaptation of the character of supply to the wants of the *masses*. The success which attended this second attempt, on the part of the Marquis d'Aveze, hastened the adoption of his idea by the government, as

supplying a truly laudable stimulant to manufacture, worthy of national recognition and support, and it thus led directly to the establishment of the first Official Exposition, which took place the same year, on the very spot in the Champ de Mars on which the army had held a triumphal show of the immense and splendid collection of Italian spoils. Six weeks after that *fête*, the *nation* erected the "Temple of Industry," and exhibited specimens of the blessings and advantages of *peace*. The Temple stood in the midst, while around it were arranged sixty porticos, filled with all that Paris and its vicinity could produce, either of use or beauty. The galleries remained open only during the three last complementary days of the year VI. of the Republic, 1798; but excited the greatest enthusiasm throughout the country. The system of intrusting the judgment on the merits of the several exhibitors to a jury composed of few men, the most distinguished in science and art, was at once adopted, and so satisfactorily has it been found to work, that it has been constantly acted upon up to the present time. Prizes were awarded for watches, mathematical instruments, printing, china, morocco, &c.

The success of this exposition was so great, that the government resolved to institute them annually, and to give them a national character; but, in spite of the circular of the Minister of the Interior to that effect, the political commotions of the times prevented the next exhibition from taking place till 1801, three years after, and then, perhaps, only in consequence of the great exertions made by the First Consul, who visited the factories and workshops of the principal towns of France, taking with him several distinguished men, stimulating all he saw to efforts for progress, and in many instances bestowing rewards. This second Official Exposition took place in the quadrangle of the Louvre, under elegant porticos prepared for the occasion. Notwithstanding the great difficulties in getting up this exposition, more than 200 exhibitors competed for the prizes; double the number of those who had done so at the previous one in 1798. Upon this occasion, ten gold, twenty silver, and thirty bronze

medals were awarded; one of the last being adjudged to the celebrated Jacquard. It is worthy of notice, that though the Jury of the Exposition especially commended carpets, china, fine printing, &c., they awarded prizes to improvements in the quality of wool as a raw material, and to excellence in woollen and cotton fabrics; thus early evincing the tendencies of these institutions to apply themselves to the interests of the masses.

The French government, still adhering to the idea of annual exhibitions, prepared for its third exposition in the following year, and it took place in 1802, on the same spot as its predecessor; though so little time had elapsed, between five and six hundred exhibitors competed for prizes, for it had been, says Mr. Wyatt, in his report, a period of extraordinary exertion and activity, and a development of a corresponding character was accordingly manifested. The most striking features of this year were the extended application of mechanical and chemical science to facilitate production, and the consequent great reduction in price of all articles of popular demand. One of the results of the popularity of these institutions was the establishment, shortly after the close of this exposition, of the *Société d'Encouragement*, which has aided, in an extraordinary degree, the inventive talent of France, and the application of abstract science to the requirements of manufacture. It is worthy of remark, that while in France the Society of Arts and Manufactures owes its existence to the interest excited by public exhibitions of the products of industry, in England, the establishment of corresponding exhibitions will probably be mainly owing to the influence of our Society of Arts and Manufactures.

The fourth French exposition took place in 1806, for which, a magnificent building was erected in front of the Hôpital des Invalides. On this occasion, the exhibitors had increased to more than 1,400, nearly three times the number of those of the previous exposition four years before; and it was found necessary to keep the doors open for twenty-four days, nearly four times as long as the previous exposition.

In every department of textile fabric, an amazing improvement had been effected. For the first time, appeared the printed cottons of Mulhausen and Logelbach. Silk thread and cotton lace, blonde, cloth, mixed goods, and, above all, the beautiful imitations of cashmere shawls, exhibited a perfection scarcely to be anticipated, if we take into account the terrible financial fluctuations of the period.

The manufacture of iron by the aid of coke, instead of charcoal, and that of steel by new and greatly-improved processes, supplied arms at once to the peaceful and the warlike, tools to the workman, and deadly weapons to the soldier.

The application of the power of transferring ornament from copper plates to the surface of porcelain, aided much in increasing the demand, and lowering the price of this most important article of domestic comfort.

Owing to wars and their troubles, it was not till 1819 that the fifth French Exposition took place, which was held in galleries constructed in the court of the Louvre. It opened on the *fête* of St. Louis, in honour to the restored king, and closed only the thirty-fifth day. The number of exhibitors was near 1,700, a slight increase on that of the previous exposition. On this occasion, improvements in metal-work were especially manifested in fine castings, rolled iron, anchors, tools of all kinds, plated articles, bronze, stereotype plates, oxides, as colouring matter for glass.

The sixth French Exposition took place in 1823, on the same spot as its predecessor, opening on the same day, August 25, and continuing for fifty days. The number of exhibitors was about the same as in 1819, being fourteen less; but the rewards were increased to 1,091, being 282 more than in 1819. Improvements in every description of production were manifest, but those in the construction of machinery were the most remarkable and important. On this occasion, was exhibited the model of the first French suspension-bridge for the river Rhone, designed by Messrs. Séguin.

The next French Exposition was in 1827, in a building

of immense magnitude, opening on the 1st of August, and closing on the 1st of October. On this occasion, great improvements were made in the classification of articles, and the general arrangements of the exhibition. This year, the even and superior finish of many descriptions of goods showed a manifest improvement in their manufacture, while the great application of steam enabled the producer to supply them at reduced prices, which had very considerably increased both the home consumption and foreign trade. Thus the manufacture of merino, which, fifteen or twenty years before, had scarcely existed, had now increased to such an extent, that fifteen million francs' worth was annually disposed of. The shawl, silk, tulle, and blonde trades had also expanded in an equal manner. The application of machinery to making paper in endless lengths had affected the manufacture of paper-hangings, and enabled the superior French taste to rival and ultimately monopolize the favour with which, up to about this time, the English productions had been regarded. Improvements in plate-glass manufacture, and the revival of the processes of painting and staining that material, added another element to the resources of ecclesiastical decoration. The cultivation of raw silk had been extended to northern departments, and the processes of winding and throwing greatly improved. Cotton-printing for the million began to assume a gigantic development, and in ginghams particularly attracted attention.

The eighth French Exposition was held in 1834, in four pavilions, erected on the four sides of the Place de la Concorde, and remained open for sixty days. This year, there were nearly 2,500 exhibitors; there was a general advance in manufacturing skill; the display of products was magnificent, and the greatest interest was evinced in it by all classes.

Successful and brilliant as the last exposition had been, it was far surpassed by that of 1839, which was held in a grand hall, a gallery, and eight long apartments, affording an area of 120,000 square feet, erected in the Champs Elysées. There were no less than 3,281 exhibitors, of

whom 878 gained rewards. This year, the principal features were, in raw materials—native silk, nitre, marbles, French lithographic stones, fine wool, &c. ; in machinery—the perfection of Jacquard looms, well-boring instruments, spinning apparatus, &c. ; in manufactures—steel, glass, &c. ; and in the arts—lithography, and engraving on wood, applied to the improvement of design in various branches of manufacture.

The views which have guided the Central Jury in their decisions on the products exhibited on this occasion, bear strong testimony to the increased extent of the French export trade, to the growing demand on the part of the public for goods at the lowest price, and to the consequent adoption by the manufacturers of the principle of 'large sales and small profits,' a system not previously very much favoured in France.

The tenth exposition took place in 1844, in a vast building, again erected in the Champs Elysées, in which 3,960 manufacturers exhibited their productions, of whom 3,253 were honourably noticed.

The eleventh and last French Exposition, took place in 1849, in a building erected in the Champs Elysées, covering more than five acres of ground, and in which the productions of 4,494 exhibitors were arranged for the inspection and delight of countless throngs.

In these last two expositions, an immense variety of raw material, machinery, and manufactures was exhibited. In every department, an advance on the previous exhibitions was manifest ; an increase of taste was almost universally apparent ; and cheapness of production seemed to have been an object of as earnest pursuit as those of quality and taste. Indeed, after these two expositions, France may well claim the high honour of having originated, cherished, and completely established National Industrial Exhibitions. It is true, that other nations have partially followed her example, but no other people have given them so systematic and regular a basis as one of their established institutions. The Bavarian and the Belgian governments have, within the last few years, instituted industrial exhibitions, in imitation of those of France,

and they have been attended with the most encouraging success and popularity. And in this country, during the last ten or fifteen years, there have been a great many local exhibitions of arts and manufactures, but they were all in the character of bazaars, to raise funds for particular objects, with the exception of the very limited exhibitions held by the Society of Arts last year. Manchester, Leeds, Birmingham, Dublin, and other towns have successfully held such bazaars, chiefly composed of the productions of the surrounding country; the one which most nearly approached the French Expositions, in the variety and extent of the national productions displayed, was the Great Free Trade Bazaar, held, for twelve days, in Covent Garden Theatre, in 1845, which not only was eminently successful as a bazaar, but excited the greatest public interest as an exhibition of our manufactures.

In February, 1849, M. Buffet, the French Minister of Agriculture and Commerce, addressed a circular to the Chambers of Commerce of France, proposing that specimens of skill in agriculture and manufactures from neighbouring nations should be admitted to their approaching exposition, and asking the opinion of the manufacturers upon the subject. The answers he received induced him to abandon the idea, when it was at once adopted by our Society of Arts, with Prince Albert at its head. It was, however, no longer confined merely to neighbouring nations, but, with the highest degree of enlightenment, it was extended to the whole commercial world. All our colonies, in every part of the globe, and all people, with whom we had commercial communication, were invited, upon perfectly equal terms with our own people, to join in one grand exhibition of the industry of man. At first, the real magnitude and the great difficulties of the project were not fully perceived, and the proposal was scarcely made public by the Society of Arts, before impediments began to rise up in their way, and for more than a year difficulty after difficulty beset them. Though they took the greatest pains to enlist our manufacturers generally, by sending competent agents and lecturers amongst them to explain its objects and its advantages to this

country, serious opposition to it existed until the middle of last year. Had the project been tried in France, it would have been carried through with far less difficulty, as it would have had the advantage of the power and purse of the government, which being utterly impossible with our habits of public action, it was absolutely necessary to make the proposition popular. When the time comes for giving a faithful history of its struggles, the Society of Arts will reap the enduring honour it deserves, and every one of its members who took an active part in pushing it on, will have ample reason to be proud of what he has done. And we do not say it in the spirit of sycophancy, because he is a prince, but in honest admiration of his manly conduct, to Prince Albert by far the greatest share of honour will be found due. To him, more than to any one else, we owe the adoption of the idea from the French minister, its generous and enlightened enlargement, and that courageous and persevering conduct, in all that related to the Exhibition, which has overcome every obstacle. Indeed, but for his great intelligence, his "habits as a man of business," his indomitable perseverance, and the enormous influence he wielded, from his high position, the plan would inevitably have failed. When, however, the Royal Commissioners had fixed upon the plan, and contracted for the construction of the Palace of Glass in Hyde Park, opposition began rapidly to die away, and to give place to an almost universal desire to promote the success of the Exhibition, and to make such arrangements as would best secure the comfort, amusement, and interests of the foreign visitors, whether contributors or mere spectators, from whatever part of the world they might come—in a word, to give them a hearty, honest, generous, John Bull welcome. Besides, as the multifarious preparations for this mighty exhibition have progressed, all the newspapers and periodicals have been so full of their details, so many publications have been started and devoted almost entirely to them, so much information has been diffused, and so much discussion has taken place with regard to the Exhibition, that it is now difficult to find any one who is not



enthusiastically in favour of it, and thoroughly convinced of the manifold advantages likely to be derived from it by ourselves and the whole civilized world. On the other hand, many manufacturers and merchants in foreign countries were at first exceedingly averse to the Exhibition of 1851, but, as with us, discussion and better information have led to more enlightened views. Prince Albert, in his speech at the York banquet, said, in the name of the Royal Commission:—"Although we perceive in some countries an apprehension that the advantages to be derived from the Exhibition will be mainly reaped by England, and a consequent distrust in the effects of our scheme upon their own interests, we must, at the same time, freely and gratefully acknowledge, that our invitation has been received by all nations with whom communication was possible, in that spirit of liberality and friendship in which it was tendered, and that they are making great exertions, and incurring great expenses, in order to meet our plans." Upon the same occasion, Lord Carlisle, one of the most enlightened men of the age, thought that "the promoters of this exhibition were giving a new impulse to civilization, and bestowing an additional reward upon industry, and supplying a fresh guarantee to the amity of nations. Yes, the nations were stirring at their call—but not as the trumpet sounds to battle; they were summoning them to the peaceful field of a nobler competition; not to build the superiority or predominance of one country on the depression and prostration of another—but where all might strive who could do most to embellish, improve, and elevate their common humanity."

And Lord John Russell said, "I participate with my noble friends who have spoken, in entertaining hopes of the brightest kind from the Exhibition of next year. I do so, because I think, as I have said elsewhere, that there are not only direct, but many collateral benefits likely to accrue from this project; and now, let it be remembered, we are about to try what can be effected by the arts of peace. Thirty-five years ago, the nations of Europe were emerging from a dreadful, costly, and sanguinary war;

in the course of this war, the various nations of Europe exhibited, let it be confessed, all the virtues of war—hardihood, enterprise, and fortitude, enduring, for the sake of national independence, the greatest and most painful sacrifices; they suffered all this because, whether war was wisely or unwisely entered into, national independence was felt to be the prize, for the preservation of which every effort should be made. But if the nations of Europe then exhibited, with scarcely an exception, those virtues which belonged to war, I think, after so many years of peace, it is now for us to show that there are advantages which can be gained from peace—that there are virtues which belong to peace; and, I trust, in the Exhibition of next year, we shall show that we can promote the comforts—that we can enlarge the knowledge—that we can strengthen the kindly affections of mankind towards each other, and produce effects which, great as were the virtues in war, will be far more profitable to the world generally, and more consonant with the lessons which we learn from religion and morals. I trust, therefore, we shall show, not only that peace has been victorious as well as war, but that those victories have a far clearer, purer glory than any that can be obtained by combat and the destruction of men by each other; and if we can accomplish this, not only this country, but the nations of the world, will have reason to be grateful to that Prince who has framed this project, who has persevered in it against all opposition, and who is about to reap the reward of exertions attended with no individual benefit, but with much labour to himself, but which have been dictated by a lively concern for the interest and earnest aspiration for the true welfare of mankind at large.”

At a meeting in Birmingham, Mr. Cobden, in speaking of the advantages that might be expected to flow from this exhibition, said, “ We shall by that means break down the barriers that have separated the people of different nations, and witness one universal republic; the year 1851 will be a memorable one, indeed: it will witness a triumph of industry, instead of a triumph of arms. We shall not witness the reception of the allied sovereigns

after some fearful conflict, men bowing their heads in submission; but, instead, thousands and tens of thousands will cross the Channel, to whom we will give the right hand of fellowship, with the fullest conviction that war, rather than a national aggrandizement, has been the curse, and the evil which has retarded the progress of liberty and of virtue; and we shall show to them that the people of England—not a section of them, but hundreds of thousands—are ready to sign a treaty of amity with all the nations on the face of the earth.”

It is difficult to over-rate the advantages likely to arise from this great exhibition. There can be no doubt that the whole civilized world will derive from it corresponding benefits to those which have been experienced in France from her expositions, with regard to Agriculture, Manufactures, Machinery, the Mechanic Arts, Fine Arts, and the appliances of Science to the wants of practical life. But this exhibition must exert the most salutary influence in many ways, in which national exhibitions could have little or no effect. It will do much to teach the politicians, merchants, manufacturers, and labourers of different nations, that the whole commercial world constitutes one vast community, in which the true interests, advancement, and well-being of the people are as mutual and as much bound up together as those of the people of any one nation. For, in all probability, this is truly the first one of All Nations Exhibitions which are to follow it, and be held in other parts of the world. Already, the desire for such an exhibition has taken root with our brethren of the United States, and sooner or later these “go-ahead” people will be certain to accomplish it. Prussia, too, has already taken the hint, and contemplates the establishment of a permanent Museum of the finest and most remarkable productions of all nations, to serve as models for her national industry.

International exhibitions will not only remove those mischievous and absurd restrictions upon manufactures and commerce which were the offspring of former ignorance and animosity, but they will necessarily tend to a simple system of common arrangements for the

commercial world, which must greatly increase the facilities and consequent benefits of trade, especially with regard to Patent Laws and Customs Regulations.

One of the happiest influences of such exhibitions will be the great stimulus they will give to the study and diffusion of sound geographical knowledge. Everything in them that is beautiful, curious in construction, or in any way remarkable, will at once create such a permanent interest in the country producing it, as to excite a desire to know more of it; while the very catalogues and descriptions of the articles, with their pictorial illustrations, will serve as the best possible primers in geography. But, perhaps, by far the most beneficent result of these exhibitions will be the promotion of educational institutions among the artisans in every part of the world; for, however important to the advance of manufactures and the mechanic arts may be the contributions of scientific men, ingenious inventors, and artistic designers, the intelligence and skill of the workmen are absolutely necessary. The feeling of this necessity has already done much in the establishment of institutions and schools for the instruction of workmen in several countries, especially in France; and the spread and repetition of industrial exhibitions will do much more in this good work. The very position in which these exhibitions place the artisan and the products of his labour, is calculated to make him feel a just pride and to raise his self-estimation, which will necessarily create the desire for mental improvement.

Not the least in importance among the various beneficial results of this first great international exhibition, is the magnificent and wonderful building in which it takes place—a building of iron and glass, covering eighteen acres of ground, and growing up in all its strength and beauty so rapidly, that it seemed to rise almost by enchantment. This Crystal Palace will introduce a style of architecture, which will be a new and most important element in the appliances of civilization, this mode of building being not only eminently calculated for the

requirements of such exhibitions, but admirably suited, from its lightness and beauty, to a number of purposes; amongst others, winter-gardens and promenades near towns. Already, the Buckinghamshire Railway Company have contracted with the builders of the Crystal Palace for the erection of a new station at Rewley, Oxford, on the same principle. And Mr. Paxton, the inventor, has sent in his plan for an iron and glass roof over the area of the Royal Exchange.

We consider the building itself of so great importance, as to justify us in giving some notice of its origin. Not long after the appointment of the Royal Commissioners, the following document made its appearance:

“The Committee appointed by the Royal Commission to advise on ‘all matters relating to the building,’ having received the sanction of the Commission, are desirous of obtaining from all parties who are disposed to assist them, suggestions for the general arrangement of the buildings and premises required for this exhibition. Upon the general form of the building in plan, the distribution of its parts, the mode of access, and the internal arrangements and contrivances, will depend the convenience and general fitness of such a building; and it is upon these points that the Committee seek information and suggestions, and wish to encourage the most extended competition in the preparation of plans. The Committee do not propose to offer any pecuniary reward for such plans—they rely upon the desire which men of all countries will feel to forward the objects of the proposed exhibition. The Committee think it probable, that when the plans are received, they may not be limited to the selection of any one plan, but may derive useful ideas from many; and that the best plan may be determined upon by the help of this general assistance. As the credit of any such plan will be due solely to the contributors, the Committee propose to make a report, in which they will acknowledge, by name, those whose plans had been wholly or partially adopted, or who had afforded the most useful suggestions: and the Committee hope to be able to offer such other honorary distinction

to the successful contributors as the circumstances may appear to warrant. In order to guide the contributors in the preparation of such plans and designs, and to facilitate the examination and the comparison of them when received, the Committee have enumerated concisely the principal 'desiderata' for such a building, and have laid down certain rules and conditions, to which they earnestly request the contributors to conform, as the Committee will be under the necessity of abiding strictly by the regulation of not acknowledging any plans which may be sent in a form inconsistent with these rules."

This brought forward two hundred and forty-five competitors for the honour of furnishing the desired plan; amongst whom were near forty foreigners. To three of the native and fifteen of the foreign plans, commendation was given; but no one satisfying the Committee, they perfected one for themselves, from the various suggestions afforded by the competing architects, adding on, "as their own exclusive contribution, a dome of gigantic proportions." This dome was so unpopular, and the contest about its site was so fierce, that the whole scheme of the Exhibition was in some danger. Mr. Paxton, the celebrated horticulturist at Chatsworth, seeing "the jeopardy of the undertaking, from the forcible arguments put forward against the plans proposed," and feeling that the principles he had adopted in the construction of his immense iron and glass house for the Victoria Regia, could be successfully applied to a building of unlimited extent, set himself to work, at the twelfth hour, to produce a plan which met all the requirements of the Committee, and avoided all the objections of the public. "It was not," says Mr. Paxton himself, at a meeting of the Derby Institute, "until one morning, when I was present with my friend Mr. Ellis, at an early sitting in the House of Commons, that the idea of sending in a design occurred to me. A conversation took place between us, with reference to the construction of the new House of Commons, in the course of which, I observed, that I was afraid they would also commit a blunder in the building for the Industrial Exhibition; I told him that I had a notion in

my head, and that if he would accompany me to the Board of Trade, I would ascertain whether it was too late to send in a design. I asked the Executive Committee whether they were so far committed to the plans as to be precluded from receiving another; the reply was, 'Certainly not; the specifications will be out in a fortnight, but there is no reason why a clause should not be introduced, allowing of the reception of another design.' I said, 'Well, if you will introduce such a clause, I will go home; and, in nine days hence, I will bring you my plans all complete.' No doubt, the Executive thought me a conceited fellow, and that what I had said was nearer akin to romance than to common sense. Well, this was on Friday, the 11th of June. From London I went to the Menai Straits, to see the third tube of the Britannia Bridge placed, and, on my return to Derby, I had to attend to some business at the Board Room, during which time, however, my whole mind was devoted to this project; and, whilst the business proceeded, I sketched the outline of my design on a large sheet of blotting-paper. Well, having sketched this design, I sat up all night, until I had worked it out to my own satisfaction; and, by the aid of my friend Mr. Barlow, on the 15th, I was enabled to complete the whole of the plans by the Saturday following, on which day I left Rowsley for London. On arriving at the Derby station, I met Mr. Robert Stephenson, a member of the Building Committee, who was also on his way to the metropolis. Mr. Stephenson minutely examined the plans, and became thoroughly engrossed with them, until at length he exclaimed that the design was just the thing, and he only wished it had been submitted to the Committee in time. Mr. Stephenson, however, laid the plans before the Committee, and at first the idea was rather pooh-poohed; but the plans gradually grew in favour, and by publishing the design in the *Illustrated News*, and showing the advantage of such an erection over one composed of fifteen millions of bricks and other materials, which would have to be removed at a great loss, the Committee did, in the end, reject the abortion of a child of their own, and unanimously recommended my

bantling. I am bound to say, that I have been treated by the Committee with great fairness. Mr. Brunel, the author of the great dome, I believe was at first so wedded to his own plan, that he would hardly look at mine. But Mr. Brunel was a gentleman, and a man of fairness, and listened with every attention to all that could be urged in favour of my plans. As an instance of that gentleman's very creditable conduct, I will mention, that a difficulty presented itself to the Committee as to what was to be done with the large trees, and it was gravely suggested that they should be walled in. I remarked, that I could cover the trees without any difficulty; when Mr. Brunel asked, 'Do you know their height?' I acknowledged that I did not. On the following morning, Mr. Brunel called at Devonshire-house, and gave me the measurement of the trees, which he had taken early in the morning, adding, 'Although I mean to try to win with my own plan, I will give you all the information I can.' Having given this preliminary explanation of the origin and execution of my design, I will pass over the question of merit, leaving that to be discussed and decided by others, when the whole shall have been completed."

The site of the Crystal Palace is in that part of Hyde Park which lies between the Kensington-road and the ride which is called Rotten-row, the centre of the building being opposite the Prince of Wales's Gate, a situation in all respects desirable, except, perhaps, that it is somewhat too near the road to afford the best effect from this principal approach to the Exhibition.

The ground-plan of the building is a parallelogram, 1,851 feet long, by 456 feet wide in the broadest part, with a transept of 408 feet long and 72 feet wide intersecting the building at right angles in the middle. The side walls rise in three steps; the outer wall rises from the ground 24 feet high; the second rises 20 feet higher, or 44 feet from the bottom of the pillars below; and the third rises 20 feet higher than the second, or 64 feet from the bottom of its supporting pillars, giving within the building a great central avenue or nave 72 feet wide, and



on each side of it three avenues 24 feet wide, and two 48 feet wide, the transept being 108 feet high, to give ample room for the trees which remain under it. The roofs of the different sections of the main building consist of a series of ridges and valleys, of 8 feet span, running transversely, so that there is a valley at the top of each column. The transept has a semicircular roof, with a radius of 36 feet. The space occupied on the ground-floor is 772,784 square feet, and that of the galleries above 217,100 square feet, making together about 21 acres. The total cubic contents of the building are 33,000,000 feet.

There are four exits at the east end, four at the west, and six on the south side. The main entrances are three in number—one at the south end of the transept, nearly opposite the Prince of Wales's Gate, richly ornamented, extending along its entire breadth, with seven pairs of doors, each of eight feet span; the other entrances are at the ends of the centre aisle, each with nine doors of a similar width.

In the language of Mr. Paxton, the plan is so simple in all its parts and details, that "a section of one part shows the whole; for it is only by the multiplication of those parts that the stupendous structure is extended;" resting in every part on columns 24 feet apart, which form regular avenues throughout the building. As the whole safety of the edifice depends upon these columns, their construction and arrangement are of great importance. Unlike brick and stone walls, iron is a material which has its peculiar dangers as well as advantages. The columns are all hollow; it being well known to scientific men that a hollow pillar is much stronger than a solid one of equal gross diameter. Thus if two columns be taken of 30 feet diameter, both containing the same quantity of metal, the one hollow, 12 inches in diameter at the outer, and 10 inches in the inner portion, therefore being one inch thick, and the other solid, 6.63 inches in diameter; the solid pillar would break at a pressure of about 110 tons, while the hollow pillar would take about 440 tons to break it. Each of the columns is fixed in a

socket formed in a base or broad flange which rests upon a foundation of concrete. Iron plates are fixed round each of the columns, at about two feet from the lower end of the ties; and four vertical iron bars are firmly secured to the plates at the top, and to the projecting flanges of the column and socket at bottom. At each of the meeting angles there are altogether twelve sets of braces; there are likewise four sets of braces at each of the inner angles of the 24-foot walk or avenue. Under each of the gallery crossings, or passing-places, are four sets of diagonal ties, and in some of them an ornamented boss, introduced so that the screw ends and nuts are entirely concealed. The roof of each story is supported by girders and trusses resting upon four rows of columns, which divide the space longitudinally into the three avenues. Wrought-iron trusses or girders, fitted together on the ground, span transversely the 48 feet space, and cast-iron girders those of 24 feet. The wrought girders, which are of the same depth as the cast ones, viz. two feet, are slightly arched. Every part of the girder is so arranged as to diminish the strain upon the other parts—thus, by means of the cross bars, the top bar is prevented from falling in, in consequence of the weight placed upon it, whilst at the same time the bottom is prevented from throwing out, or making a lateral thrust, every part being adjusted with great nicety.

Had the ribs of the great arch been composed of iron, it would have made them too heavy. They are, therefore, composed of four layers of wood, the two central planks being 4 inches, and the two outer ones 2 inches thick. Around the arch so composed is placed, inside and out, two straps of iron curved to the proper extent, and the whole is secured together by iron bolts. These arches, it was found, were so composed as to prevent any undue tension or lateral thrust, being capable, by their own friction, of bearing all their weight without additional support.

There are 3,300 iron columns, varying from  $14\frac{1}{2}$  feet to 20 feet in height, 2,224 cast-iron girders, and 1,128

iron beams for the galleries, and about 900,000 superficial feet of glass, weighing 400 tons, wood only being used for sash-bars, joists, flooring, doors, and the boarding which covers the lower part of the building.

There are two important features in the building worthy of being prominently brought before the public: the provisions made for its proper ventilation, and for its drainage.

In the spaces or panels formed by the iron and wooden columns vertically, and by the sill and plate horizontally, are introduced the lower tiers of ventilators, originally intended to have been formed of luffer boarding; but the ventilators have been made in an improved form, have a light appearance, and are more easily opened or shut. Each frame of the lower tier of ventilators is constructed of  $\frac{7}{8}$ th deal, is 7 feet long, 4 feet 3 inches high, and  $4\frac{1}{2}$  inches deep; being dovetailed at angles, and further strengthened behind by angle-ties. The blades or luffers are of sheet-iron, forming a flat S curve. Each blade is hung as a swing dressing-glass, with two  $\frac{5}{8}$ th inch pivots resting in proper bearings, fixed in the side of the frame. The blades, which are placed horizontally, are 6 inches from centre to centre; the whole being connected together by a vertical deal chamfered bar, by means of forked iron arms  $3\frac{1}{2}$  inches long, and fixed to the sides of a sinking or groove in the vertical connecting-bar, which is 3 inches in width, and of sufficient length to embrace the eight blades. By the weight of a single pound, all the blades can be opened or shut at will, so that a simple lever apparatus will complete this important part of the construction. A wooden stop is introduced, both at top and bottom of the frame, to prevent the upper and lower blades from moving beyond their prescribed limits when closed. The construction of the upper tier of ventilators is similar to that of the lower, but, instead of eight blades, there are only five in each frame. The upper ventilators occupy the space above the close boarding, and are immediately behind the ornamental iron fanlights or panels. There are advantages from this mode of venti-

lation ; it nicely distributes the admitted air, however large the volume of it, and effectually prevents the entrance of water in rainy weather.

The provision made for drainage required considerable skill in arranging, so that no portion of the gutters, extending over an area of roof of from 18 to 20 acres, should at any time be overflowed, however heavy might be the rain falling upon it. The ridge and furrow plan of roofing requires that every length, both of longitudinal or transverse furrow or gutter, should be so formed, as to carry off half the rain-water received into it from the skylights in one direction, and the remainder in the other direction. This is effected by "cambering" every length of gutter, which not only secures this important condition, but also prevents the "sagging" or sinking of the timber below its proper level ; thus each gutter-plate is considerably curved upward, and looking along under a continuous line of skylights, the effect is very striking. The surface water from the skylights is received into the longitudinal or three-way gutters, and these again empty themselves into the framed transverse gutters at either end. The hollow iron columns act as rain-water pipes, in conveying the water from the roof into the cast-iron drain-pipes, running in parallel lines along the whole length of the building, and which have each a sectional area of  $28\frac{1}{4}$  square inches.

The flooring on the ground-floor consists of boards, 9 inches wide, laid half an inch apart, on sleepers, so as to permit the dust in sweeping to fall through the spaces between the boards ; and this necessary operation will be rapidly performed by a moveable hand-engine, immediately followed by a sweeping-machine, consisting of brooms, fixed to an apparatus on light wheels, drawn by a shaft.

From north to south, and across the breadth of the structure, the flooring is perfectly level ; from west to east it will be slightly inclined, like the stage of a theatre, though not, of course, to the same extent. This will add much to the effect of the interior, by enabling visitors at the lower end to see almost at a glance over the whole edifice.

Though from north to south the flooring is quite horizontal, the land slopes a little, and thus enables the architect to give the building on that side the appearance of a raised foundation, which will be faced with green sod. The advantage of this to the external beauty of the principal *façade* is great.

It is thought that the building will be one of the driest ever constructed, since it would always be acting on the principle of a still. Any exhalation that might arise from the soil underneath the floor would naturally rise till it came in contact with the glass at the top; on any alteration of the temperature it would be condensed on the glass, and must again trickle down by capillary attraction, and find its way to the small groove prepared on each side of the Paxton gutters, and then be eventually carried away into the sewer; so that any evaporation would never have the power of returning, because the moment it got condensed on the surface of the glass or sash-bars, it could only escape through the gutters. The grooves not only take away the water, but, supposing a pane not to be sufficiently tight in the groove, any small quantity of water that might escape through the edge of the glass and get underneath, by the same principle of capillary attraction, would find its way to the groove, and then pass away. The transept-roof and the skylight-bars were not only placed horizontally with respect to the vertical part of the arch, they were "herring-boned;" in fact, they were angular, both horizontally and vertically at the same time. So that in the transept-roof, from top to bottom, the same principle of capillary attraction will be at work and provided for; and every skylight is arranged on a slope of  $2\frac{1}{2}$  to 1, which is the same as in the horizontal roof.

The exterior surface of the first or ground tier is of wood, for the purpose of greater security, and also to afford a wall space for such articles as require to be hung up in order to be seen to advantage.

Another feature of the building is the refreshment-courts, which are divided into three classes. Those whose means and taste incline them to patronize the first will

discuss the delicacies provided for them under the branches of the trees, which occupy the north end of the transept ; those whose habits of life are less expensive, or whose palates are less nice, will be accommodated westward ; while for the crowd of visitors the requisite accommodation will be provided on the north-east side of the building.

For safety from fire, a 9-inch water-main, charged constantly with a 70-foot column of water, has been laid ; and from it 6-inch pipes run all round the building, with 16 branches into the interior ; so that an immense quantity of water could be poured on with hose. An engine has been put up specially at the Chelsea Water-works, and the company have undertaken to supply, if needed, 300,000 gallons a day. There are nineteen windows, with doors adjoining, which overlook the whole edifice, so as promptly to discover anything wrong.

Besides the immense space thus devoted to the purposes of the Exhibition, there is on the north side of the building a room set apart for the reception of machinery. The dimensions of this department are on a scale proportionate to the important branch of inventive industry to which it is to be dedicated. It is 946 feet long, 48 feet broad, and 24 feet high. The engine-house stands at the north-western side of the Glass Palace, and will furnish steam to the extent of one hundred horse-power to the models within the building. Its steam will print off copies of a newspaper, work all kinds of looms, and in fact, do more at once than steam from any single boiler has ever accomplished.

An Electric Telegraph is constructed in the building, to enable those employed officially to communicate with each other, with the greatest possible facility, and without any running about and confusion.

Messrs. Fox and Henderson, of Birmingham, are the builders, who, after a meeting with great iron-founders, glass-blowers, &c., contracted to complete its erection by the specified time, at a cost of £79,800, if the materials are given up to them after the exhibition ; or £150,000, if the building remains. Mr. Paxton furnished all the

necessary details of the construction very minutely, from the concrete filling of the holes in the ground, under each support, through the base-plate, the columns, the connecting-pieces, to which were attached the girders for the galleries, the second and third sets of columns, and the roof-trusses, the box-gutters, and the "Paxton" gutters; which latter were intended to provide at the same time for conveying away the rain from the roof, and the condensed moisture from the inside. Details were also given of the mode of conveying the rain-water, &c., into the adjoining sewers; of the supporting columns; of the ventilation, by means of sets of louvres of galvanized cast-iron; of the supply of water for the extinction of fire, and for the supply of the fountains; and of the experiments for testing the girders and trusses, by the hydraulic press erected in the building, by which the strength of the whole was proved before they were used.

Messrs. Fox and Henderson's tender was only verbally accepted on the 26th of July, 1850; possession of the site was obtained on the 30th of July; the first column was fixed on the 26th of September; and the building, though not completed in all its details, handed over on the 1st of January to the Royal Commissioners.

As no brick and mortar were used, and all the proportions of the building depended upon its iron pillars and girders, nearly all the materials arrived on the spot ready to be placed and secured in their destined positions. Yet vast operations were necessary, even then, in its construction, and called forth the most admirable display of scientific ingenuity, systematic arrangements, and great energy. Hardly any scaffolding was used, the columns, as they were set up, answering their purpose. Machines for performing all the preparatory operations required to be done on the spot were introduced in the building, and some of them invented for the occasion.

Such, for instance, as the sash-bar machine, gutter machine, the mortising machine, the painting machine, the glazing machine, and other ingenious contrivances for economizing labour. Indeed everything in the pro-

gress of the building was conducted with such consummate skill, system, and energy as to excite the admiration, and frequently the surprise of the throngs who for a considerable period daily visited it. Though more than two thousand workmen were employed in the different departments of construction, the greatest order and regularity prevailed, almost without noise. It was often a most animating spectacle to see so many men busily employed in the various operations tending to the rapid accomplishment of the great design, with groups of visitors watching with intense interest, in one part the sawing machine, in another the sash-grooving, in a third the glaziers, in another the placing of a column or fixing of a girder, and in the transept an immense gang of men raising the enormous ribs, which was perhaps the most difficult of all the diversified operations of the building. When the first two of these ribs were elevated to their proper position in the transept, Prince Albert attended to witness the experiment; upon his departure, at the ringing of a bell, the whole of the men engaged on the building came swarming forth and formed themselves into a semicircle round his carriage to give him a hearty huzza as President of the Society of Arts. At the same moment a brewer's dray with two hundred and fifty gallons of beer made its appearance according to orders previously given by his Royal Highness, the cheers for whom were not at all the less hearty on account of the unexpected treat. As the work approached its completion, her Majesty upon several occasions accompanied Prince Albert, making private and quiet visits to the building, and manifesting great interest and pleasure in what she witnessed.

Throughout the progress of the building it has been visited by many of the most distinguished persons in the country, and the contractors finding that the numbers who flocked to it impeded in some degree their operations, determined to make a charge of five shillings for admission, the proceeds of which were to constitute an accident-relief fund for the workmen. A very considerable sum was so raised, though the number of accidents



has been very small, and the nature of the accidents not at all serious. Some idea of the number who flocked to see the exterior may be formed from the fact, that on one Sunday at least 100,000 persons entered the gates of Hyde Park.

The deep interest felt in the Industrial Exhibition by the operative classes generally was manifested in a remarkable manner in connection with the work of the building, large portions of which were done by the piece; no difficulty was found in procuring any amount of hands from time to time required; whilst such has been the enthusiasm of artisans in various parts of the country, that many even left their work, and journeyed to London, ambitious of assisting with their own hands to raise this beautiful Palace of Industry. Every morning the workmen assembled in great numbers at the entrance, ready for employment, and when engaged they turned out very efficient hands.

The enthusiastic feeling excited by the World's Industrial Exhibition has given rise to the following poetical effusion, by Martin F. Tupper, which breathes so generous a spirit, and one so proud of the position which this exhibition gives the artisan, that we cannot resist its insertion:—

Hurrah! for honest Industry, hurrah for handy Skill!  
 Hurrah! for all the wondrous works achieved by Wit and Will!  
 The triumph of the Artisan has come about at length,  
 And Kings and Princes flock to praise his comeliness and strength.

The time has come, the blessed time, for brethren to agree,  
 And rich and poor of every clime at unity to be;  
 When Labour, honoured openly, and not alone by stealth,  
 With horny hand and glowing heart may greet his brother Wealth,

Aye, Wealth and Rank are Labour's kin, twin brethren all his  
 own,

For every high estate on earth, of labour it hath grown;  
 By duty and by prudence, and by study's midnight oil,  
 The wealth of all the world is won by God-rewarded toil.

Then hail! thou goodly gathering, thou brotherhood indeed!  
 Where all the sons of men can meet as honest labour's seed;  
 The tribes of turban'd Asia, and Afric's ebon skin,  
 And Europe and America, with all their kith and kin!

From East and West, and North and South, to England's happy coast,

By tens of thousands, lo ! they come, the great industrial host—  
By tens of thousands welcomed for their handicraft and worth,  
Behold ! they greet their brethren of the Workshop of the Earth.

Right gladly, brother workmen, will each English Artisan  
Rejoice to make you welcome all, as honest man to man ;  
And teach, if aught he has to teach, and learn the much to learn,  
And show to men in every land, how all the world may earn !

Whatever earth, man's heritage, of every sort can yield,  
From mine and mountain, sea and air, from forest and from field ;  
Whatever reason, God's great gift, can add or take away,  
To bring the worth of all the world beneath the human sway ;

Whatever Science hath found out, and Industry hath earned,  
And Taste hath delicately touched, and high-bred Art hath learned ;

Whatever God's good handicraft, the man He made, hath made ;  
By man, God's earnest artisan, the best shall be displayed !

O think it not an idle show, for praise, or pride, or pelf,  
No man on earth who gains a good can hide it for himself ;  
By any thought that anything can anyhow improve,  
We help along the cause of all, and give the world a move !

It is a great and glorious end, to bless the sons of man,  
And meet for peace, and doing good, in kindness while we can ;  
It is a greater and more blest, the Human heart to raise  
Up to the God who giveth all, with gratitude and praise !

When the whole structure was elevated, and its outline completed, every beholder was struck with its grandeur and extreme simplicity; we have met no one indeed who did not fully agree with Professor Cowper in looking upon the original idea of Mr. Paxton as one of the most successful efforts of imagination and contrivance, and in considering the way in which Messrs. Fox and Henderson have rendered the bold conception practicable, as one of the most astonishing and successful examples of contrivance, science, industry, and engineering skill the world has ever known. And whatever wonders it may contain, the structure itself is the greatest wonder of all.

“Not the least wonderful part of the Exhibition,” says an eloquent writer in the *Times*, “will be the edifice within which the specimens of the industry of all nations

are to be collected. Its magnitude, the celerity with which it is to be constructed, and the materials of which it is to be composed, all combine to insure for it a large share of that attention which the Exhibition is likely to attract, and to render its progress a matter of great public interest. A building designed to cover 753,984 superficial feet, and to have an exhibiting surface of about 21 acres, to be roofed in, and handed over to the Commissioners within little more than three months from its commencement; to be constructed almost entirely of glass and iron, the most fragile and the strongest of working materials, to combine the lightness of a conservatory with the stability of our most permanent structures—such a building will naturally excite much curiosity as to the mode in which the works connected with it are conducted, and the advances which are made towards its completion. Enchanted palaces that grow up in a night are confined to fairy-land, and in this material world of ours the labours of the bricklayer and the carpenter are notoriously never-ending. It took 300 years to build St. Peter's at Rome, and 35 to complete our own St. Paul's. The New Palace of Westminster has already been 15 years in hand, and still is unfinished. We run up houses, it is true, quickly enough in this country; but if there be a touch of magic in the time occupied, there is none in the appearance of so much stucco and brick-work as our streets exhibit. Something very different from this was promised for the great edifice in Hyde Park. Not only was it to rise with extraordinary rapidity, but in every other respect is to be suggestive of 'Arabian Nights' remembrances."

The decoration of the building has been wholly intrusted to Mr. Owen Jones, according to whose designs, and under whose immediate superintendence, everything in this department has been executed. His specimens of his plan of painting the building at first excited a good deal of opposition, and several persons condemned his proposal of using bright colours. Of late years, the employment of colour, as found exemplified in the most ancient monuments of Nineveh and Persia,

has made rapid strides on the continent, but the architects of this country are only now beginning to turn their attention to the subject, and that which was the result of useful science and study on the part of Mr. Jones, was rashly condemned by those who had, at all events, less knowledge, and had given little attention to the matter.

This original-minded artist has therefore painted the under-sides of the girders red, the round portions of the columns yellow, and the hollows of the capitals blue, in due proportions. All the stalls are covered with red cloth, or pink calico; by which means, not only is the unsightly woodwork concealed, but a warmth of colouring is thus given to the whole ground area of the building, which, combined with the mass of blue over-head, and the yellow stripes on the columns, produces a most harmonious effect, which is further softened by covering the roof and south side with unbleached calico, to prevent the glare of light which would necessarily take place in a building whose roof and sides are chiefly of glass. Since the painting has been completed, and bright articles introduced into the structure, the result has clearly proved that Mr. Jones has proceeded on sound scientific principles, as he has certainly succeeded in producing the best possible effect. He has also displayed great knowledge in his profession, by the judicious distribution of various large articles, and groups of articles, with a view to their effect upon the general internal aspect of the Exhibition.

The safety of the structure has been much discussed, in consequence of adverse opinions expressed by Mr. Turner, who constructed the immense conservatory in Kew Gardens, and the still more important opinion of Professor Airey, the Astronomer Royal, that the building was not sufficiently secure, and that he feared it would some day come tumbling about the ears of the people like a pack of cards. But the question has been set at rest in the most satisfactory manner by the application of tests far beyond any strain which could arise from the densest possible packing of visitors in the galleries. The first

experiment was made in the presence of her Majesty and Prince Albert, the immediate object of which was to ascertain, by various tests of the severest character, to what extent oscillations could be conveyed to the gallery by the regular motion of a living load, and to ascertain whether the provisions which had been made to meet such contingencies were sufficient.

The preparations made for this experiment consisted of the construction of a perfect bay of gallery, with its floors, binders, girders and connecting pieces, in every respect complete, and similar to the actual gallery, supported upon four points, bedded on temporary foundations. Rows of planks the full width of the platform led up to it, and down from it, so that a row of men as wide as the gallery might be able to march up and down in close column. Three hundred workmen were first assembled by the contractors, and allowed to cover the platform and the planks connected with it. They were then compressed into the smallest space upon which they could stand.

The load borne on the planks represented the share of pressure which would be produced by the crowding of adjacent bays of gallery. The amount of deflection produced by this load was inappreciable. The men then walked regularly and irregularly, and ran over it. The elasticity of the floor, allowing play to the timbers and the wrought-iron work, was admirably developed by this test; and it became apparent that this quality of elasticity was of the greatest value in protecting the cast-iron girders from sudden shock.

Thus, in the severest test which could possibly be applied, when the men standing closely packed together continued jumping simultaneously for several minutes, although in the regular vibrations of the floor the binders played up and down, the extreme deflection of any of the girders did not exceed one-fourth of an inch. As the contractors' men were unable to keep military time in their step, and it was considered desirable to ascertain the effect of perfectly regular oscillations, the whole of the corps of Royal Sappers and Miners on the ground, set in close

columns, were marched several times over and around the bays, and were finally made to mark time in the most trying manner. With the result of this last test, the eminent scientific men present expressed themselves highly gratified, observing that while at the climax of vibration, the motion did not exceed that common in ordinary London houses at evening parties. A minute examination of the platform, made immediately after the completion of the experiments, showed that no part of the construction had in any way suffered injury.

But as it was of the greatest possible importance that not the shadow of a doubt should exist as to the strength of the galleries, another trial was instituted. Messrs. Maudslay and Field, the eminent engineers, suggested a method for setting the question at rest, beyond all cavil and timidity. Accordingly, seven frames were made, each capable of holding thirty-six cannon-balls of 68 lbs. each. In this way a pressure of  $7\frac{1}{2}$  tons was readily obtained, and as it was ascertained by Mr. Brunel, that the greatest weight which could be obtained by packing men as closely as possible on any given space was 95 lbs. to the square foot, such a test, representing 100 lbs. to the square foot, was considered amply sufficient to establish the strength and security of the galleries. The pressure of an ordinary crowd, such as that in a pit of a theatre or at a meeting, does not exceed from 50 lbs. to 60 lbs. to the square foot ; and it must be remembered that as a great part of the gallery space will be occupied by light articles displayed on stalls, the number of spectators that can circulate there at one time must be limited. Moreover, the passages are made to run at the sides close to the pillars, where the strain is least likely to be dangerous. Bearing all these things in mind, the experiment made with 252 68-pounders must be considered conclusive. As in their wooden frames they were rolled along by the united strength of a large party of Sappers, the pillars and girders betrayed no sign of weakness, and the flooring of the gallery did not vibrate nearly as much as that of a drawing-room during a ball. The Executive Committee and the principal members of their staff

watched the experiment with great interest, and were, as everybody has been since, perfectly satisfied.

Before leaving this part of our subject, we must not neglect to inform the visitor that the Crystal Palace ought to be viewed from a distance, in order to be fully appreciated in its external grandeur. The approaches by the Kensington-road and Rotten-row are far too close to afford a proper view. The best points for a spectator are the drive along the Serpentine and the bridge over it. There, the distance, the height of the ground, and the open space, enable the eye to take in a considerable portion of the building. The trees even then shut out part of the prospect, but enough remains to captivate the beholder. The vast extent of ground covered by the structure, the transparent character of its walls of glass, its terraced elevations, the airy abutments, "the large transept, with its arched and glittering roof shining above the great vitreous expanse around it, reminding one of nothing ever heard of before," are seen from these points to the greatest advantage, and the sight of them will well repay a visitor for any little additional trouble he may take in seeking these points of view.

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### INTERNAL ARRANGEMENTS, &c.

CLEAR passages under the galleries of eight or ten feet run the entire length of the building. At the sides of the passages, under the galleries, the tables are kept low, others gradually rising in height behind them. The effect of this mode of distributing the articles, is to form one of the most pleasing and attractive *coups d'œil* of any in the building. Upon the extreme north and south sides, there are also longitudinal passages of eight or ten feet in width, the former interrupted by the offices of the Commissioners and the entrances, and the latter by the refreshment-rooms. Independent of the transept, there are eight transverse passages, running completely across the building, those at the eastern and western extremities being interrupted by the entrances at those points. The

arrangements observed by exhibitors with respect to passages required for their own convenience and the more effectual display of their articles, are such as conduce to the general effect. The view of the central passage is almost uninterrupted; counters projecting into the great central passage being built up no higher than four feet at top,—some rise in steps from the ground.

With the exception of the offices, staircases, entrances, refreshment-courts, and the various avenues and passages, including the transept, 72 feet wide, the whole of the ground-floor and galleries may be said to be available space for exhibitors. All the foreign countries, including the United States of America, are on the east side of the transept, both on the ground-floor and in the galleries; whereas the United Kingdom, the East Indies, and the British colonies, are on the west side thereof, with the exception of the United Kingdom, whose dominion is extended into parts of the north and south galleries, on the east side of the transept. The productions of England and the colonies occupy thirty separate sections. Of the four main divisions into which it is divided, machinery occupies the north side, raw materials and produce the south side, and manufactures and the fine arts the centre. Along the central passage, to the west of the transept, a frontage upon each side of seven bays, or 168 feet, is occupied by the productions of the colonies. Adjoining the colonies, and upon the north side of the passage, are placed articles included in the section of paper, printing, and bookbinding. By the side of these are placed furniture and upholstery, decorations, paper-hangings, and *papier-mâché*. Manufactures in mineral substances, used for building or decorations, as in marble, slate, porphyries, cements, artificial stones, &c., are placed next in order. Manufactures in leathers, skins, furs, and hairs, occupy the next position; and adjoining to them are the cotton manufactures; and to printed, dyed, woven, and felted fabrics, is allotted the space next to that of cotton. Crossing the western extremity, and retracing his steps upon the south side of the central passage, the visitor will arrive at the place allotted to mixed fabrics, and pass on to



that assigned to woollen and worsted manufactures—next to the space occupied by flax and hemp, and the linen manufactures, which will be immediately opposite to those of cotton. Adjoining the linen manufactures are articles of cutlery, edge-tools, and surgical instruments, including locks and grates; and by the side of the latter are displayed glass, china, pottery, and ceramic goods, with the colonial products adjoining. Mining, quarrying, metallurgy, and mineral products are placed along the southern passage, and the space between them and manufactures is occupied to a great extent by agricultural implements. Jewellery, and the greater proportion of silks and velvets, with lace, embroidery, and other light and fancy wares, are placed, as far as practicable, in the galleries. Such are the general features of the arrangements of British and colonial articles. Foreign productions occupy nineteen sections to the east of the transept. These will hereafter be described in their proper order.

This geographical arrangement, with that of placing the fine arts, produce, and manufactures in the middle, and raw materials and heavy articles back, is altogether most successful. Every kind of produce is thus exhibited in such a manner that it can be readily compared with its like, and the contrast may be made local, so that districts which manufacture particular descriptions of goods, are in some degree pitted against each other. The whole Exhibition thus presents a series of displays of national industry, each methodically arranged, and forming, for the purposes of comparison, a perfect exhibition within itself. From this distribution many advantages will arise to the intelligent spectator, who will not fail thereby to detect the strong and weak points in the productive power of the various countries represented. He has also thus placed before his eyes a chart of the course and impulse of trade all over the world; of the developments of which it is capable, and of the direction in which these may most safely be pointed. The limits within which competition can be profitably carried on, not only between localities, but between nations, will here receive a clearer elucidation than they have ever yet obtained. The latent wealth of

the world will be revealed, and commerce taught to satisfy her demands from new sources. Another general rule observed by the Committee in the arrangement of the Exhibition is, that raw material and produce — the least attractive portions of the display — are disposed at the sides, articles belonging to superior manufactures and the fine arts are brought prominently in view by being ranged all along the centre of the building, their richness and splendour of colour and form is thus shown to the greatest advantage, and the effect is still further increased by the advantage of the geographical arrangement which places the productions of the tropical regions nearest to the transept, and removes the less attractive but more useful industry of colder regions to the east and west ends.

The orderly arrangement of every contribution, and the subordination of each part and object to the idea of one great and systematic display, forces upon the mind a deep interest in that combined operation by which the Crystal Palace at once becomes a perfect epitome of the world's industry—a daguerreotype likeness, struck off in one moment, of the true "*organisation de travail*." Not only are the different characters of the articles from different parts of the world very discernible in their texture, fashion, and style of execution, but there stand the exhibitors or their representatives, often the very producers themselves, so marked and peculiar in their physiognomy, costume, and manners, as at once to tell the visitor the origin of most things he may look upon.

During the preparations in the arrangements and placing of the articles in the Exhibition, the scene was often most curious and interesting. Along the transept and middle of the nave, carts and drays, drawn by huge horses, made their appearance loaded with packages, which were promptly removed to their destined positions, and frequently accompanied by strange-looking guardians; all over the floors and up in the galleries, carpenters, English and foreign, were busily at work constructing counters and stalls, and putting up cases; others, as various in appearance as the packages they unpacked,

were engaged in bringing forth and examining the newly-arrived articles; custom-house officers were keenly performing their watchful functions; the officials of the building and a few favoured visitors were satisfying their curiosity, perhaps in earnest gazing at some striking article just unfolded from its carefully-packed bed; red-coated sappers and miners were everywhere actively moving about, aiding in the unloading, placing, &c., of the packages as they arrived; in various parts of the building workmen were employed in its completion; glaziers were seen through the glass roof above crawling about to stop crevices and replace broken glass; while as far as you could catch the sounds of voices, the words of many languages, and of a copious variety of the English met the ear, producing a strange, but, with us, far from unpleasing effect. And as we viewed this new scene, we could not help reflecting how arduous and difficult a task the Commissioners and their officers must have had, in meeting unseen difficulties, the ceaseless demands, the most natural little jealousies, the whims, and caprices, and misconceptions of exhibitors and their agents, which must necessarily arise in arrangements so multifarious and so complicated, throughout which the most perfect order and regularity had to be attained. It is, however, most honourable to all concerned, that difficulties have been removed, demands satisfied, jealousies soothed, whims and caprices kindly dealt with, and misconceptions patiently explained away, so as to produce a wonderful degree of satisfaction and harmony. And the exhibitors, on their part, have generally manifested a praiseworthy disposition to conform to every suggestion in their arrangements, especially of coloured articles, calculated to add to the general effect. And it was by no means an easy task to produce the best general effect while the geographical allotment was preserved, and the various articles were placed, in most cases, according to their systematic classification into four divisions and thirty sections. To this division, however, we shall hereafter advert with greater minuteness.

In the space occupied by machinery which forms

a parallelogram of 240 feet, by 72 feet in breadth, situated on the north-west portion of the building, arrangements are made for displaying in motion almost every variety of machine, from the first stage of the preparation of the cotton up to its final manufacture in the loom, including "laps," "racks," "single scutchers," "cotton-bings," "finishers," "stubbers," "drawers," "grinders," "roving-machines," "throstles," "mules," "doublers," "machines," "warpers," "winders," "fly-frames," and "looms," with a variety of other machinery. With respect to the details of the arrangements made by the Commissioners, machines requiring to be driven by steam will be supplied with steam, at a pressure not exceeding 30 lbs. to the square inch, free of charge to the exhibitors, and it will be conveyed in clothed pipes to those parts of the building where the machines are situated, and many parties sending such machines have sent with them a small portable steam-engine, to which a steam-pipe is laid on. In cases where the machines are too small to require an independent portable engine, they are placed in groups, in connection with some steam-engine sent by other parties for exhibition.

Many industrial operations will thus be exemplified during the Exhibition, and impart an immense amount of instruction and information to thousands, who otherwise would perhaps never have had their attention directed to such operations. With our notions of this mighty show of the real business of life, the collection of machinery excites far deeper interest than anything else exhibited. We admire the genius evinced in the works of art, we look with wonder on the curious productions of skill, we delight in the costly and brilliant things, which supply the wants of the rich and great, but we see in the machine that which, by cheapening, gives countless comforts and enjoyments to the masses, who otherwise would themselves have remained mere machines, with little development of the faculties of our common nature. It is an interesting fact in connection with machinery, that its invention and experimental construction have oftener than

anything else brought the educated and the uneducated, the high and the low, into an intimate communication, in which mutual respect has many and many a time grown into a sincere and honourable friendship, advantageous to all parties; while it is frequently to the workman that we owe important improvements and inventions themselves. Besides, it is to machinery we are now indebted for this magnificent exhibition, and its stupendous edifice itself. Without the large application of machinery to almost every portion of the building, the Crystal Palace could not have been produced, and without the application of machinery to manufactures, there would have been little worth exhibiting from any part of the world.

Many persons imagine that an exhibition of this kind will contain only such articles as are really curious or intrinsically valuable; that is a great mistake. Every such collection must necessarily contain, as this certainly does, much of a very frivolous character, and of but moderate excellence. Those whose travelled eye, superior knowledge, and more cultivated taste will turn away from such contributions, must recollect that all who exhibit, and all who go to see the Exhibition, have not had quite their advantages, and that while the Commissioners have done all they can to gather up what is excellent, it was imperative upon them not to be too exclusive in their admission of articles, or it could hardly have been a world-wide display. However, the frivolous and the mediocre occupy no large space, while the important and the truly ingenious, the skilful, the beautiful, the valuable, and above all, the useful, challenge the admiration of the visitor at every step, as he travels for miles through the wonderful collection.

The principles which have guided the Commissioners in the appropriation of space, both for the products of British industry and for that of other countries, have at once been liberal and prudent. With reference to our own people, they have been influenced, to a certain extent, by the demand for allotments, pruning down this demand in the divisions where it was most exuberant, and encouraging it in those where it was most feebly

displayed. As might have been expected in a practical nation like ours, little difficulty was experienced in finding a very large proportion of exhibitors in the departments of machinery and manufactures. These engrossing and paramount branches of our own industry would almost of themselves have flooded the Crystal Palace with their products; and it was absolutely necessary, in order to secure a choice selection of articles, to limit the space available for them. In the divisions of raw produce and the fine arts there has been less competition, and to these, as struggling branches of our national industry, the Commission have been more indulgent. Great difficulties have been found, both in confining machinery and manufactures within manageable bounds, and in raising the display of fine arts and raw produce to a scale commensurate with their importance. In the fine arts department a scarcity of contributions at first existed, the principal exhibitors coming forward at the last hour. After all the exhibiting surface of the Crystal Palace had been exhausted, ample space remained for ornamental purposes; and in a point where, as a people, we are so deficient, the facilities afforded for giving an impetus to the fine arts in connection with manufactures have been a little neglected. In the appropriation of allotments to foreign countries, the Commissioners have been mainly guided by the extent of their commercial transactions with ourselves. Of course there are nations, such as Holland, with whom our intercourse, though great, being principally dependent upon the extent of their mercantile marine, affords little scope for illustration at the Exhibition; but, upon the whole, the areas allotted to different states that have volunteered contributions tally pretty closely in relation to each other with what might have been predicted from the returns of their trade with us. One-half of the new building having been set apart for their use, it was of course necessary to intimate to each the space at its disposal, and in most cases the space so allotted fell short of what was desired. Some countries wavered considerably about entering into the general competition invited, and the South American Republics

are almost unrepresented; but the great European communities have entered warmly into the great design, showing most conclusively, that nations, like individuals, respond to challenges for generous action even more readily than to those for the slaughter and robbery which have so long disgraced civilized communities.

As it was most important to keep this grand industrial exhibition as much as possible from descending in any way into the character of a bazaar, the Commissioners at first made a rule to prevent the affixing of prices to any articles; but as a great number of the most useful fabrics are exhibited for the economy of their production, it was found necessary to relax this regulation. We are glad it has been so far relaxed; for to the great majority of the visitors, economy of production will no doubt be the chief point of interest, while to the purposes of commerce, the advance of civilization, and the great objects of this Industrial Exhibition, it is of paramount importance. These exhibitions began, as we have already noticed, by the collection and display of the productions of the fine arts for the gratification and patronage of the rich, but their natural and beneficent tendency in another direction soon manifested itself by the rapid increase of such things as were calculated to supply the wants and improve the condition of the masses. In fact, these exhibitions, in a high degree, manifest the great law of progress, that the world is not made for a chosen few, but for the happiness and enjoyment of the whole human family. We therefore consider the manufacturer who produces some fabric of everyday and universal utility, at a reduced cost, as a great benefactor, worthy of the highest commendation, and deserving perhaps of a higher class medal than one who displays a finer or more elegant production. And it is with no little pride that we reflect upon what the English manufacturer has done in this way immeasurably beyond the manufacturer of any other country, for the amelioration of the commercial world. All the more important articles of daily necessity—cottons of every description, woollens of all kinds, cutlery and tools, books and engravings—have been produced cheaper

and cheaper by them, till the very humblest and poorest begin to partake of enjoyments once only known to the richer classes of society.

Following all the passages, passing along all the galleries, so as to see everything or most things exhibited, will require the visitor to travel between twenty and thirty miles, and as the greater part of his time must necessarily be occupied standing still, in examination of what he sees, and his change of place be by a very slow progress, it is evident that many visits will be requisite in order to see this exhibition, even though such visit be a long one. As to examining everything critically, that will be wholly out of the question. Every visitor will have to make a marked distinction, not only between the frivolous and important, the mediocre and the excellent, but between what has little and what has great interest in his own eyes. We hear of persons "running up to London for a day, to see the Exhibition." If one can only spare a day for the purpose, it will certainly be a day well spent, and that ought to be spent by all who can afford it; but a very small portion of that which is worth a long journey to behold can be seen under several days most industriously devoted to the purpose.

All, however, should devote as much time for the inspection and study of the wondrous collection, as their circumstances will permit. Intelligent persons may reap immense improvement while they are seeking the gratification of their curiosity, gaining an increase of knowledge, improvement of taste, enlargement of views, and more liberal feelings towards the great family of man. Many of the advantages of extensive travelling here offer themselves, for a vast deal of all that is worth seeing in most parts of the civilized world is here placed before us for examination and ready comparison, highly illustrative of the science, arts, character, manners, customs, and habits of different nations. The young especially will reap incalculable advantage from repeated visits, particularly if properly directed by their friends while viewing the Exhibition, and afterwards led to read respecting the various countries whose names and productions have been



so agreeably imprinted in their memories. But it is the working class, to whom more than to any other we owe this mighty show, who may derive the greatest improvement from it, and who ought to stretch a point to take all the advantage they can of so rare an opportunity.

The Commissioners have anxiously considered all classes of visitors, and we are sure they have endeavoured to make such arrangements as would most effectually secure the convenience of all classes of the public visiting the Exhibition, whether for study and instruction, or for the more general purposes of curiosity and amusement. While they looked to the security of the enormous amount of property deposited in the building, to the effective control over the number of visitors admitted at any one time, and to the self-supporting character of the Exhibition, they have endeavoured to render it accessible to all persons at the lowest possible charge which would enable them to effect these purposes. Some persons, and Mr. Paxton at their head, influenced beyond doubt by the most generous and high-minded views, proposed that admission should be gratuitous. Had it been so determined, we should have had no fears whatever for the conduct of any who entered the building, but it would have changed, and, in our opinion, altogether lowered the character of the Exhibition, degrading it from the high and honourable position of being a self-supporting institution, to that of dependence upon a government grant, which would have been alike unjust and contrary to British habits of public action.

The charges for admission are, for season tickets, for a gentleman, £3. 3s., and for a lady, £2. 2s., not transferable, but entitling the owner to admission on all occasions on which the Exhibition is open to the public. On the first day of the Exhibition season tickets only were available, and no money was received at the doors of entrance. On the second and third days, the price of admission on entrance was, each day, £1; on the fourth day of exhibition 5s., and reduced on the twenty-second day to 1s. From the twenty-second day the prices

of admission will be as follows :—on Mondays, Tuesdays, Wednesdays, and Thursdays, in each week, 1*s.*, on Fridays, 2*s.* 6*d.*, on Saturdays, 5*s.* No change will be given at the door. This regulation is necessary to prevent the inconvenience and confusion which would arise from interruption or delay at the entrances. Should experience in the progress of the Exhibition render any alteration in these arrangements necessary, the Commissioners reserve to themselves the power of making such modification as may appear desirable, of which due and timely notice, however, will be given to the public. No free admissions, under any plea, are granted; and the first persons who bought season tickets, were Prince Albert, the Executive Committee, and many of the Commissioners themselves.

From the enormous space within the Crystal Palace, and the excellent arrangements made for conducting the Exhibition, there is hardly great crowding of visitors; while the outlets are so numerous and well placed, that any one can leave the building at any moment without difficulty. This is a point of very great importance, and will enable many persons of delicate health and peculiar temperament to visit the Exhibition without uneasiness. Besides, the ventilation is so perfect, that none of the ordinary inconveniences of an exhausted, overheated, and polluted atmosphere can possibly exist. The space is so vast, that there will be very little difference, in its freshness and purity, between the atmosphere within and without the building.

The refreshment-courts are so placed as to admit of ready access; and every care has been taken to make them conduce to the convenience and wants of the visitors. The principal refreshment-court in the transept has its entrance through a space of 24 feet. Upon either side of the entrance, a low railing, extending 24 feet, placed at a distance of 48 feet from the intersection of the nave and transept, separates the refreshment-space from the other part of the building. The serving-spaces and counters are placed upon either side, having each a frontage of 96 feet. The open space between the counters

is 96 feet in width, and 72 feet in depth, extending to within 48 feet of the extreme north side of the building; the intervening space being occupied by "lobbies," waiting-rooms, &c. A twenty-four feet square, at the extremity of the serving-spaces, is occupied by store-rooms. The space occupied by this court, including all the passages, &c., is about 18,000 square feet. The eastern refreshment-court, situated in the front of a space, gravelled and turfed, 120 feet in length by 48 feet in breadth, partly occupied by a number of small trees, and two spaces of 48 feet square. The total length of counters and bars in this court is nearly 350 feet, the width of the counters being from four to six feet: 1,052 square feet are set apart for lobbies and waiting-rooms. The total area of this court, including passages, &c., is near 20,000 square feet. The area devoted to the western refreshment-court, including passages and space for "lobbies and waiting-rooms," is 12,096 square feet, the length of counter and bar being 136 feet. Glasses of filtered water are supplied gratis to visitors, and a quantity of bread, cheese, and butter always kept for sale, at prices agreed upon between the contracting parties; and it has also been arranged that none of the other refreshments supplied shall be charged at a higher rate than that of any respectable London establishment; those rates being fixed by the Commissioners, so that under no circumstances is there any danger of extortion being practised upon visitors. Wines, beer, and spirituous liquors are strictly prohibited, in order to prevent the possibility of any annoyance from that most common species of insanity which people labour under when they are said to be "a little fresh." To insure order in every way, a considerable body of the police-force is stationed in and about the building, who, from their admirable drilling, and most civil and obliging deportment, are, in many ways, highly serviceable to visitors, especially foreigners.

Among the many arrangements which have devolved upon the Commissioners, they have not neglected to take the greatest precautions to prevent any accident from fire

in the building. The mains are always kept charged with water, and a number of the men of the fire brigade are present during day and night. Twenty engines, the property of the Board of Ordnance, a large number of leather buckets, and a quantity of hose, have been placed at the disposal of the Commissioners, and are kept ready for immediate use, should they be required, to extinguish any fire that might occur.

Great difficulties have existed in consequence of our absurd and mischievous Patent Laws, which must appear to a stranger as expressly intended to repress that very advance which the Exhibition is chiefly intended to stimulate and promote. The Commissioners applied to Parliament last year for a special Act to secure to all manufactures and inventions received for exhibition a provisional and gratuitous registration, which should secure them, sacred and intact, to their respective owners; this protection to extend for one year, dated from the opening of the Exhibition: at the end of which probation the inventors or owners would be at liberty to avail themselves of the ordinary protection of the Patent Laws, which we trust by that time will be most materially and amply revised. But unfortunately this special measure, the Designs Act of 1850, intended by its promoters to meet a peculiar and necessary exigency, has, through the singular omission of the very words which alone could secure its object, and on which, indeed, depended the very spirit of its enactment, been rendered utterly abortive as regards any manufacture or invention for which Letters Patent are being granted. The Commissioners have, however, taken necessary steps to provide for this difficulty and to make the security of all exhibitors of designs and inventions complete.

The most delicate and important matter in the arrangements which the Commissioners had to make was, the constitution of juries for adjudging prizes. The French Expositions had, however, afforded much experience upon the subject, from which our Commissioners have largely profited. Professor Playfair, to whom the task was confided, has produced a most elaborate and scientific classi-

fication of the objects in the Exhibition, as the basis of the arrangements for juries. The Exhibition is divided into four classes, and these again into thirty sections, with a jury to each section. Raw materials are in four sections, three of which have eight jurors, and one six jurors; machinery is in six sections, three of which have twelve, and three eight jurors; manufactures are in nineteen sections, five of which have twelve, seven have ten, four have eight, and three have six jurors; and fine arts are in one section, having twelve jurors; making an aggregate of 270 jurors. To facilitate the labours of the juries, the articles in the Exhibition are arranged as much as possible in coincidence with the thirty sections, and a classified list of objects under the province of each jury is furnished to it. No juror can be a competitor, either himself or through his firm, for a prize in the section for which he acts, and no award can be made, except by a majority of the whole jury, nor published till it has been submitted to a council composed of the chairmen of all the sections, whose sanction is final. The juries commenced their duties on Monday, the 12th May, at 10 o'clock, and will be aided in the general transaction of the business by a person to be named by the Royal Commissioners, who by himself, or by a deputy to be approved of by the Commission, may be present at their deliberations, for the purpose of explaining the rules of the Commission. This nominee of the Commission will not have a vote in any of the juries, or at all interfere in the adjudication of awards.

The jury will generally consist of an equal number of British subjects and of foreigners. Each jury will be presided over by a chairman, to be nominated by the Commissioners, and he will be aided by a deputy-chairman, to be elected by the jury, who may appoint one of their own body as a reporter. At the sittings of the Council of Chairmen the deputy-chairman will take his seat in the absence of the chairman of his section.

The Council of Chairmen will be constituted, as far as practicable, equally of British subjects and foreigners.

The Council of Chairmen will frame the rules for the

guidance of the juries, and will also determine the conditions under which the 1st, 2nd, and 3rd class medals respectively are to be awarded, and to define the general principles to which it will be advisable to conform in the awards in the several departments of the Exhibition. It is the wish of the Commission that medals should be awarded to articles possessing decided superiority, of whatever nature that superiority may be, and not with reference to mere individual competition.

Although the Commissioners may be disposed, under peculiar circumstances, to consider the propriety of pecuniary grants to individual exhibitors, they will only take such applications into consideration on the recommendations of the several juries, sanctioned by the Council of Chairmen.

As some of the most important duties of the Council of Chairmen were preliminary, they therefore commenced on Monday, the 5th of May. In order to represent the wishes of the Commission, and to explain its rules, a nominee of the Commission attends the meetings of the Council, and aids in the transaction of business, but he does not possess a vote or act as a member of the Council.

In constructing the British juries, those towns which exhibit to a considerable extent in any of the sections, were invited to send a list of names of persons competent efficiently to represent the knowledge of those sections.

Those persons who have been recommended as jurors, but who, from the numbers of the jury, are not placed on it, may, on the application of a jury, be called in on special occasions, to give aid, under the title of associates, but without a vote.

The decisions regarding foreign jurors are delayed until the opinions of the agents of foreign commissions are obtained as to the proportions in which each nation should be represented in the respective classes, and as to the principles of nomination most agreeable to the countries which they represent.

The Council of Chairmen first met on Monday the

5th May, and the juries, for the transaction of business, on Monday the 12th May. Although it is impossible to set apart special days in which the juries alone can examine the articles exhibited, to the exclusion of the public, arrangements will be made to carry on these examinations with as little inconvenience as possible.

Many persons have been at a loss to know how agricultural implements were to be judged of. They have been placed under the management of a committee of gentlemen, appointed by the Royal Agricultural Society, and the field implements sent for practical trial in the country, to Pusey, where it was carefully performed, before competent and impartial judges.

The Commissioners state that after having had under their careful consideration the subject of the prizes to be awarded to exhibitors, they resolved to have medals struck, of various sizes and different designs, it being their opinion that this is the form in which it will, generally speaking, be most desirable that the rewards should be distributed. They have decided to select bronze for the material in which the medals are to be executed, considering that metal to be better calculated than any other for the development of superior skill and ingenuity in the medallic art, and at the same time the most likely to constitute a lasting memorial of the Exhibition.

The Commissioners offered three prizes of £100 each, and three of £50 each, for the best designs for these medals, and out of a large number of competitors, the three larger prizes were awarded to M. Bonnardel, of Paris, to Mr. L. C. Wyon, and to Mr. G. G. Adams, of London, and the three other prizes to Mr. J. Hancock, of London, M. Wiener, of Brussels, and M. Gayrard, of Paris. M. Bonnardel's medal represents Mercury holding a female figure by the hand, intended for Industry, with an anvil, locomotive-engine, &c., near her, in front of a figure of Britannia, standing on a slightly-raised platform, with both hands extended, holding wreaths: flags of different nations make up the background. Motto: "Est etiam in magno quædam respublica mundo." Mr. Wyon's medal represents Britannia, seated, placing

with one hand a laurel wreath on the head of an emblematical figure of Industry; and leading her forth with the right hand. Behind, are representations of the four quarters of the world, who have brought industry to Britannia. To the right are emblems of the four sections:—the cotton-plant and sheaf of wheat, a wheel, a bale of goods, a vase. Motto: “*Dissociata locis concordi pace ligavit.*” Mr. G. G. Adams’s medal is a gracefully-modelled group, in low relief, of Fame, Industry, and Commerce. Motto: “*Artificis tacitæ quod meruere manus.*”

In the department of Raw Materials and Produce, for instance, prizes will be awarded upon a consideration of the value and importance of the article, and the superior excellence of the particular specimens exhibited; and in the case of prepared materials, coming under this head of the Exhibition, the juries will take into account the novelty and importance of the prepared product, and the superior skill and ingenuity manifested in the process of preparation.

In the department of Machinery, the prizes will be given with reference to novelty in the invention, superiority in the execution, increased efficiency, or increased economy, in the use of the article exhibited. The importance, in a social or other point of view, of the purposes to which the article is to be applied, will also be taken into consideration, as will also the amount of the difficulties overcome in bringing the invention to perfection.

In the department of Manufactures, those articles will be rewarded which fulfil in the highest degree the conditions specified in the sectional list, viz.:—Increased usefulness, such as permanency in dyes, improved forms and arrangements in articles of utility, &c., superior quality, or superior skill in workmanship. New use of known materials. Use of new materials. New combinations of materials, as in metals and pottery. Beauty of design in form, or colour, or both, with reference to utility. Cheapness, relatively to excellence of production.

In the department of Sculpture, Models, and the Plastic Art, the rewards will have reference to the beauty and



originality of the specimens exhibited, to improvements in the processes of production, to the application of art to manufactures, and, in the case of models, to the interest attaching to the subject they represent.

These general indications are sufficient to show that it is the wish of the Commissioners, as far as possible, to reward all articles, in any department of the Exhibition, which may appear to competent judges to possess any decided superiority, of whatever nature that superiority may be. It is the intention of the Commissioners to reward excellence in whatever form it is presented, and not to give inducements to the distinctions of a merely individual competition. Although the Commissioners have determined on having three medals of different sizes and designs, they do not propose to instruct the juries to award them as first, second, and third in degree for the same class of subjects. They do not wish to trammel the juries by any precise limitation; but they consider that the juries will rather view the three kinds of medals as a means of appreciating and distinguishing the respective characters of the subjects to be rewarded, and not of making distinctive marks in the same class of articles exhibited. They fully recognize that excellence in production is not only to be looked for in high-priced goods, in which much cost of labour and skill has been employed, but they encourage the exhibition of low-priced fabrics, when combining quality with lowness of price, or with novelty of production. They can readily conceive that juries will be justified in giving the same class medal to the cheapest calico print, made for the Brazilian or other South American market, as they would to the finest piece of *mousseline de soie* or *mousseline de laine*, if each possessed excellence of its own kind.

Lastly, the Commissioners in announcing their intention of giving medal prizes, do not propose altogether to exclude pecuniary grants, either as prizes for successful competition, or as awards under special circumstances, accompanying, and in addition to, the honorary distinction of the medal. There may be cases in which, on account of the condition of life of the successful com-

petitor (as, for instance, in the case of workmen), the grant of a sum of money may be the most appropriate and useful reward of superior excellence ; and there may be other cases of a special and exceptional nature, in which, from a consideration of the expense incurred in the preparation or transmission of a particular article entitled to a prize, combined with a due regard to the condition and pecuniary circumstances of the party exhibiting, a special grant may with propriety be added to the honorary distinction. The Commissioners are not prepared, for the present at least, to establish any regulations on these heads. They consider it probable that a wide discretion must be left to the juries to be hereafter appointed in respect to the award of money prizes, or the grant of money in aid of honorary distinctions ; it being understood that such discretion is to be exercised under the superintendence and control of the Commission.

Like Falstaff, who was not only witty himself, but the cause of wit in others, the great Exhibition not only awards prizes, but has caused many others to be offered for competition in various ways connected with the Exhibition. That most excellent institution to which we owe the Exhibition itself—the Society of Arts—is offering prizes for philosophical treatises on the various departments of the great Exhibition, setting forth the peculiar advantages to be derived from each by the arts, manufactures, and commerce of the country. The successful treatises are to be the property of the society ; and, should the council see fit, they will cause the same to be printed and published, awarding to the author the net amount of any profit which may arise from the publication, after the payment of the expenses. They accordingly offer, in the name of the society, the large medal and £25 for the best, and the society's small medal and £10 for the second best treatise on the objects exhibited in the section of raw materials and produce. A large medal and £25 for the best, and a small medal and £10 for the second best, treatise on the objects exhibited in the section of machinery. A large medal and £25 for the best, and a small medal and £10 for the second best,

treatise on the objects exhibited in the section of manufactures. A large medal and £25 for the best, and a small medal and £10 for the second best, treatise on the objects exhibited in the section of fine arts. Each treatise must occupy, as nearly as possible, eighty pages of the size of "The Bridgewater Treatises." The society will also award its large medal and twenty-five guineas for the best general treatise upon the Exhibition, treated commercially, politically, and statistically; and small medals for the best treatises on any special object or class of objects exhibited. The treatises to be delivered on or before the 30th of June.

At an extraordinary special court, the Goldsmiths' Company unanimously voted £1,000 to be awarded in prizes to British workers and artists of their craft, for articles in gold and silver plate of the richest design and best general merit. To prizes of this sort there can be no objection, even by the most captious. They are special prizes for special skill, and it is open to all the guilds of goldsmiths in the world to give the like impulse to their several craftsmen. The court also determined not to depend solely upon the judgment of the trade as to excellence, but to call in to the assistance of the goldsmith judges, noblemen and gentlemen distinguished for their taste in art and art-manufactures. The prizes will be from £300 down to £10. The works are to embrace candelabra, church-plate, and a long list of articles, great and small, down even to a salt-cellar, that all workmen, great and small, may have occasion for their skill. The several articles are to be sent to Goldsmiths' Hall, without the maker's name, and the best will, besides the prizes, be marked, as selected by the company for the Exhibition.

The *Art-Journal* has offered a prize for the best essay on the Exhibition of 1851.

A clergyman of the Church of England, with the approbation of his Royal Highness Prince Albert, proposes, in an anonymous letter to the *Morning Chronicle*, "to give a prize or prizes of one hundred guineas for the best essay or essays on the following subject:"—"In what manner

the union of all nations, at the Grand Exhibition in 1851, may be made the most conducive to the glory of God in promoting the moral welfare of mankind." He is "anxious, previously to the final arrangements, to avail himself of the opinions of the leaders of the public mind," and would be extremely obliged by any suggestions from the editor or the correspondents of the journal, to enable him to present the proposition before the public in a form most calculated to accomplish the object he has in view.

We must also mention what may be called an *à priori* prize of no trifling character. The Right Hon. Lady Rolle and Sir John Yarde Buller, Bart., have each presented Mrs. Clark with 200 guineas, to enable that eminent manufacturer to produce the finest specimen of Honiton lace.

Two medals, after the design by Mr. Adams, who received a premium of £100 as a successful competitor for one of the designs of the prize medals for the Great Exhibition, have been executed in gold, as prizes. The figures show Commerce stimulating Industry; the fleece and loom represent the raw material and manufacture of cloth; the pallet, colour, and the lion, Great Britain. The design is exceedingly chaste and beautiful; there is no crowding of figures, and yet nothing is omitted that could give completeness. It may be seen at a glance that the medal is intended as a prize for British-manufactured woollen cloth, with the especial view of extending the export trade. They were awarded as prizes by Messrs. Bull and Wilson, of St. Martin's-lane, for the finest black cloth and black doeskin of English manufacture.

Mr. J. W. Gilbert offers a prize of £100 for the best essay in reply to the following question:—"In what way can any of the articles collected at the Industrial Exhibition of 1851 be rendered especially serviceable to the interests of 'practical banking?'" "These articles," it is explained, "may be architectural models that may suggest improvements in the bank-house or office; inventions by which light, heat, and ventilation may be secured, so as to promote the health and comfort of the bank clerks;

discoveries in the fine arts, by which the interior decorations of a bank may be improved, or the bank furniture rendered more commodious; improvements in writing-paper, pens, ink, account-books, scales, letter-copying machines, or other instruments used in carrying on the business; improvements in printing and engraving, by which banks may get their notes, receipts, letters of credit, and other documents, of a better kind and at a less expense, or so contrived as to prevent forgery; new inventions in the construction of locks, cash-boxes, and safes, which shall render property more secure against fire or thieves; and generally all articles of every kind which can be so applied as to improve, cheapen, or facilitate any of the practical operations of banking."

The Society of Arts is so completely identified with the Exhibition, that we shall here make mention of the praiseworthy arrangements made by it. The Council of the Society have determined to appropriate their rooms in John-street, Adelphi, to the hospitable duties which the international character of the Great Exhibition suggests. As a first step in that direction, they have elected all the representatives of foreign countries at the Exhibition honorary members of their body, and they have decided on the formation of reading and writing rooms for the use of our visitors from abroad. They consider that their offices will form a convenient and central spot to which the letters of foreign exhibitors may be directed, and they propose to hold weekly conversaziones, at which many of our visitors will probably attend. As the Exhibition is, to a certain extent, the offspring of the Society, this attempt to fill up agreeably the gaps which the attractions of the World's Fair may still leave unsupplied cannot be too highly praised. By such aids as the performance of glee and madrigal clubs can supply, and by the free exhibition of those collections of specimens of British art in painting and other departments which are now in private hands, those who come to see our industrial wealth may also be enabled to appreciate the genius of our country upon points wherein the collection of products in Hyde-park will necessarily leave

them uninformed. The Society, too, will have the satisfaction of contributing in a material degree to the comfort of those strangers whom we have thus invited to a peaceful rivalry, and who have come to us, we trust, in the same liberal and confiding temper as that which induced us to throw open to them our Exhibition. All this is worthy of that indefatigable Society, whose bold design, and still bolder conflict with obstructions, have given us the Exhibition of 1851. One can readily imagine how numerous these obstructions would necessarily be in a project so gigantic. A few only of the countless and perpetually-recurring difficulties which the Commissioners have had to encounter have come before the public; such as the false fears for the safety of the building, which became very general, and held back for a time many British as well as foreign contributors; our absurd Patent Laws; the unfounded but earnest objections to Mr. Owen Jones's system of decorating the building; the allotments of space; the regulations for appointing jurors; the character of the medals; the prices and arrangements for admission; and the punctual opening of the Exhibition on the 1st of May. In our opinion they have solved all their difficulties in the most admirable manner, looking honestly and zealously to the generous purposes for which the Exhibition was instituted, and acting fearlessly, though most courteously and kindly, to everybody with whom they had occasion to deal; and if they have not satisfied all, the amount of positive complaint is wonderfully small.

## EXTERNAL MOVEMENTS.

IF any of the bold plans for navigating the air had been successful, and thus given us the means of passing as we liked over the world, a grand tour of inspection into the occupations of nations made during the last year, and especially for the last six months, would have revealed a curious and most gratifying spectacle. We should have witnessed, all over Europe, in North America, in part of South America, in the West India Islands, in the North and South of Africa, in the Scriptural East, in the East Indies, and even in a nook of China herself, in all our Australasian Colonies, and in many of the other islands of the Pacific, the human family, for the first time in history, preparing for one common, peaceful, enlightened, and beneficent transaction. In immense factories, in narrow workshops, in garrets and cellars, in studios, in drawing-rooms, and in cottages, under sheds, in mines deep in the bowels of the earth, in the open fields, on mountain sides, in wild plains, and in tangled forests,—the boundless semi-deserts of South Africa and the Himalayan chain,—along winding rivers, and on the bosom of the ocean, might have been seen numbers of men and women full of thoughts of the World's Industrial Exhibition, and busily engaged in devising, fashioning, or gathering up, their quota towards it, all desiring to witness it, and many preparing to do so. We should everywhere have found, not only how readily men entered into a sort of commercial competition and friendly rivalry of skill and ingenuity, but how promptly they took faith in the message of brotherhood, and how heartily proud they laboured, as they felt themselves participating in the really glorious work. Heretofore, war has governed the world, everything has been directed by brute force, all political institutions, and nearly all distinctions and classifications of society, were derived from war; nations were great in proportion as they were warlike; feeble, as the arts of destruction declined, or the means were wanting amongst them. Men really

believed that the first and chief business in this world was to destroy each other's property, to rob where they could, and to butcher one another. Even those whose better feelings and philanthropic views revolted at the hideousness of war, learned to consider it an inevitable curse on our species, as too many up to this hour do. But, thank God, a change is coming over the spirit of the civilized world. Commerce is now about to have her day. Slowly but surely has she toiled and struggled, during the first half of this century, in the contest for dominion with war, but of late years her strides have been those of a giant, and the time, we trust, is not so far off as is generally imagined, when the world will be ruled by her peaceful sway. It is only within the last ten years that in one or two countries the notion has been growing up into popular cognizance, that one people cannot injure another who trade with them without suffering from the recoil of that injury—that a nation cannot damage a nation with which it has dealings, without damaging its own trade; before long, all commonly intelligent men will clearly comprehend that the true glory as well as the true interests of all nations, is best promoted by peace and goodwill towards each other.

And this stupendous Industrial Exhibition has already given a great, and will yet give a still greater impetus to the progress of commercial dominion.

In almost every country of Europe, in the United States of America, in all our colonies scattered over the four quarters of the world, and in all parts of our own country, Local Committees have been formed, in which all classes have taken part, and have exerted themselves with the greatest zeal in collecting contributions and forwarding the views of the Royal Commissioners. In a great number of places, at home and abroad, Local Exhibitions have been organized and the best productions selected for the Great Exhibition; many of these preparatory Exhibitions have caused much excitement and drawn crowds to visit them, while most of the articles otherwise designed for the World's Exhibition have been offered to public inspection in the towns producing them, to the



delight, improvement, and often to the surprise of those who visited them, but who had not before known what handiwork industry was daily performing at their very doors.

France, the old hereditary enemy of this country, whose over-warlike propensities have been so greatly moderated by her National Industrial Expositions, instead of manifesting any want of faith in our fair intentions, or holding back in jealousy, though she entertained the idea, and then declined holding such an exhibition, has been the first to accept our invitation and enter zealously into friendly rivalry of skill. The Minister of Agriculture and Commerce has obtained from the National Assembly a grant to meet certain expenses of the French manufacturers and workmen in connection with the London Exhibition. The report of the Committee to whom the grant was referred is so interesting, coming as it does from a people who have had the greatest experience in Industrial Exhibitions, that we cannot forbear its insertion.

“ We have ourselves endeavoured,” say the Committee, “ to collect additional information, having received communications both from the members of this Committee and the directors of the *Conservatoire des Arts et Métiers*, that admirable institution, which has rendered such great services to manufactures. It results from our investigations and deliberations, that all the advantages that may be derived from this Exhibition will not be obtained by merely furnishing the means of acquiring from it some specimens of products that our manufacturers require as patterns, either for internal consumption, or to compete advantageously in foreign markets. At the period of the exhibition of Berlin, one of the most distinguished manufacturers of France bought out of his own pocket 30,000 francs’ worth of patterns, in the generous intention of promoting French manufactures. Is that which was at that time useful less so on this great occasion? The Chambers of Commerce, and our great manufactories, will doubtless themselves make some sacrifices for that purpose; but should not means be provided for aiding them,

or supplying that which they do not feel bound to do? It will also be assuredly necessary to commission a certain number of persons conversant in technical proceedings, to make short notes by which they may remember the machines and processes we may have occasion to copy, and of which we would furnish the details to our artisans and manufacturers, by adding to the riches of our collection at the *Conservatoire*. These notes would not in themselves occasion much expense, but the labour afterwards necessary on them would be not a little costly. In fine, we may be obliged to purchase some new and simple agricultural machines, whose price may not much exceed that of a drawing, but which may be considered useful. For these different objects we have thought a sum of 100,000 francs should be added to the credit, and placed at the disposal of the Minister of Commerce. This is seed which may produce valuable fruit. We have considered, in short, that it would consist with the general wish of the French manufacturers, to enable our skilful workmen and foremen to see the products in the competition of which their lives are passed. Throughout England subscriptions are set on foot with a similar view. In other manufacturing countries also similar arrangements are making. France would not certainly be left in the back-ground. The chambers of commerce, the consultative chambers of manufactures, even the towns, will seek doubtless the means of providing for this,—the great manufactories will do it directly. But to encourage this movement, to show the interest we all take in its development, we have considered that a credit should be placed at the disposal of the Minister of Commerce, a credit which must be used with great reserve, by not devoting it to those who can pay their own expenses, but by aiding the poorest, imposing on them in every case only a portion of the travelling expenses, which may be reduced by contracts made with the owners of public conveyances. The state could obtain contracts at reduced prices analogous to those of pleasure-trains, which increase every year, to the great advantage of the population. Some of these workmen and foremen may be

selected from the superior workmen of the national manufactories of Sèvres, the Gobelins, Beauvais, the School des Arts et Métiers, or the military or naval workshops. This is not an idle matter, and assuredly manufactures will reap the useful fruits of this concourse of intelligence, which will exhibit to each workman the perfection to which he should attempt to attain, and the means of arriving at it. It is announced that several English manufacturers intend to place in juxtaposition with their products the rudest implements successively abandoned. Every manufacturer may see if he be some steps in advance, or some points in arrear; and if the instruments and the raw produce be the same, he may observe what may be effected by the hand of the workman. We have considered that, for this kind of subvention, there should be allowed a credit of 50,000 francs."

Beyond doubt, many thousands of persons of various classes, and from all parts of France, will visit the Exhibition, and return home, we trust, with a new feeling of amity and regard for us. In anticipation that vast numbers will so visit us, the French railway companies are busily engaged in making arrangements for pleasure excursions during the Exhibition months, and steamboats are to run every day, or several times a day if needful, from Calais, Dunkirk, Boulogne, Dieppe, Granville, and Cherbourg.

From Belgium and Switzerland great numbers are preparing to visit the Exhibition, and the governments of these states have delegated special *employés*, who are to come at the public expense, in order to study the productions of other parts of the world. From Austria, the Zollverein, Denmark, and Sweden, Russia, Italy, and the other states bordering on the Mediterranean, official and private persons in great numbers are preparing to visit the Exhibition.

At Gottenburg, Vienna, Berlin, Madrid, and many other European towns, companies and clubs have been formed for the purpose of getting up visiting-trains to the London Exhibition, and great numbers promptly inscribed their names. In the United States, and

our North American colonies, the most extensive arrangements are made for visiting the Exhibition, in numbers far beyond anything that could have been anticipated. The New York Life Guards, one of the volunteers so common in the United States, are making arrangements to visit Liverpool, London, and Paris, in June next. They contemplate mustering 900 rank and file. A magnificent steamer is engaged to convey them to England and back.

From Turkey, Tunis, Greece, Algeria, and Egypt, from the East Indies, even China, from South Africa, and from our colonies in the Australasian region, visitors will flock to the Exhibition.

In our own country there is hardly a town of any note that has not formed companies and clubs for visiting the Exhibition. Our artisans have universally taken the liveliest interest in the Industrial Exhibition, and the newspapers have teemed with accounts of the formation of clubs by them, to the funds of which they have been for a considerable time contributing small weekly payments. In connection with these clubs, we have had frequent occasion to notice the encouragement, friendly aid, and sometimes the more substantial assistance afforded to them by employers of the men, and by other members of the richer classes.

Extensive arrangements have been made by the different Steam Navigation Companies, and by the various Railway Companies, in this country and on the Continent, for accommodating visitors to the Exhibition. The directors of most of these companies have not only very much increased their means of conveyance, but generally met the propositions of visiting associations and clubs in a most liberal spirit. Similar arrangements have been made in the United States and in our American colonies: one party of a hundred gentlemen at New York have engaged a sailing vessel to convey them to England and back, to be fitted up so as to serve as a residence during their visit, in which they design to receive visits and to give parties.

The gathering will, on the whole, be the largest, the most diversified, and by far the most important that the world

has ever known. The barbaric triumphs of old Rome and the Olympic games of ancient Greece were splendid gatherings of the times in which they occurred, and the accounts handed down of them have continued to excite interest and admiration ever since; but they sink into but minor events compared with the congress of nations at this first World's Industrial Exhibition.

The subject of lodging the visitors to the Exhibition has excited a good deal of public attention. Various propositions have been made for the organization of some comprehensive plan which would insure proper and comfortable accommodation to every class. This has been found impracticable. The Commissioners have stimulated private enterprise and taken steps to ascertain the extent of private arrangements in different parts of the metropolis, and have thus satisfied themselves that the most ample accommodation in the way of lodgings will be at the disposal of our visitors, especially of the working classes, both from our own provinces and from abroad. One of the results of private enterprise in this way, is the fitting-up of what has been called "The Mechanics' Home," near Cubitt's factory, on the river, which it is said will accommodate a thousand persons. In every part of London, many people are preparing to let lodgings in addition to the usual number who do so; and restaurants and *tables-d'hôte* will be found in considerable numbers for the particular accommodation of continental visitors.

The following regulations have been made by the Post-Master General as regards letters:—"Letters addressed 'Post-office, London,' or 'Poste Restante, London,' are delivered only at the window of the General Post-office, St. Martin's-le-Grand. The hours of delivery from the Post-office window, are from 10 a.m. to 4 p.m. When the person applying for letters is a foreigner, he must produce his passport. When a foreigner does not apply in person, but by a messenger despatched for that purpose, the messenger must produce the passport of the person to whom the letters are addressed, as well as a written order signed and dated by such person. In the case of a mes-

senger being sent for the letters of more persons than one, he must produce the passports and orders from each person. If the applicant for the letters is a subject of the United Kingdom, he must be able to state from what place or district he expects letters before he can receive them. Subjects of states not issuing passports are treated as subjects of the United Kingdom. If letters are directed to individuals simply addressed 'London' (and not 'Post-office,' or 'Poste Restante, London'), they will not be delivered from the window at all, but will be sent out by letter-carrier for delivery at the address furnished by the applicant. Foreign letters addressed 'Post-office,' or 'Poste Restante, London,' are retained for two months at the Post-office window. Inland letters similarly addressed are retained one month at the window; after the expiration of these periods, both classes of letters are respectively sent to the dead-letter office, to be disposed of in the usual manner. All persons applying for letters at the Post-office window must be prepared to give the necessary explanations to the clerk at the window, in order to prevent mistakes, and to insure the delivery of the letters to the persons to whom they properly belong. It will much facilitate the business of the Post-office, if the words '*to be called for*' are added to the address of letters which are directed 'Post-office, London.' "

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## PRINCIPAL CONTENTS OF THE CRYSTAL PALACE.

*Ground Plan.—British.*

To those persons who have not leisure for a great many visits to the Exhibition, we recommend the following plan of going through it, which arrangement we ourselves have followed in the description of the objects of leading interest.

We shall begin with the transept, entering at the south side; then pass up the centre of the western nave, and return, examining the courts on our right hand, marked A in our plan, until we reach the space appropriated to Birmingham, when we turn to the right, and take the first aisle to the right, marked B in our plan, running parallel with the nave. Then, having reached the extreme western end, we turn to our left, and, proceeding eastward, pass through the courts appropriated to agricultural implements, marked C. We then visit Pugin's mediæval court, and pass on to the sculpture, and again proceed westward, by the extreme south passage, marked D, containing the minerals. We must then cross over to the northern part of this British division, and, commencing at the west end of the nave, examine the courts marked E, on our left hand, as far as the space appropriated to the *fine arts*, when we turn to our left, and examine the passage marked F, also the spaces appropriated to marine engines, mineral manufactures, carriages, glancing at the locomotives arranged to the north of these spaces. Again having reached the western end, we turn to the right, and commence proceeding eastward through the large space appropriated to machinery in motion, examining the objects on both sides. We now come to the space appropriated to paper and printing, and models in naval architecture. The colonial departments we now examine according to their geographical arrangement, in the following order: the East Indies, lying both north and south of the nave; Canada, South Australia; then cross the nave to Ceylon, Malta, Jersey, and Guernsey.

*Ground Plan.—Foreign.*

We now commence the foreign department, and proceed down the nave, afterwards taking the countries in order, on either side of the nave. As the names are distinctly written over these departments, the reader will experience no difficulty in this respect.

*Galleries.*

We will now proceed to the galleries in the eastern part of the building, commencing at the extreme corner of the north one, marked G in our plan, when, having reached the transept, we turn to the left, and continue our course again eastward down the central north gallery, marked H. Having reached its termination, we turn to the right, and take the central south gallery, marked I; and, again turning to the left, we finish our view of this part of the building by returning down the extreme south gallery, marked K. We then examine the galleries on the western side, commencing with the

north transept; then take the north-western gallery, marked L, and proceed to the end of the building, turn to the left, and take the central north-western gallery, marked M; we then cross to the south transept gallery, turn to the right, and notice the central south-west gallery, marked N; again proceed westward, turn to the left through the western gallery, and finish our view with the south-western gallery marked O.

No one can visit the Great Exhibition for the first time without being struck with surprise and delight at the brilliant and varied scene that surrounds him. The tremendous altitude of the glass arched roof, embracing and covering three mighty elms, which beneath its shelter are now covered with foliage; the splendid glass fountain, glittering and playing beneath the chastened light admitted by the transparent roof; countless living beings seated on the crimson benches, everywhere interspersed among the statues, or moving slowly about, gazing at the wonders around them; the sides of the transept decked with rich Indian goods; and above, a view of the corners of the galleries abutting on the centre, displaying brilliant carpets, chandeliers, and other effective objects;—all this, seen without confusion or crowding, but in one grand repose, produces an impression of wonder and admiration in every beholder, succeeded by the calm feeling produced by the glorious sight of the flags of all nations united in harmony in this Grand Temple of Concord. Once more we seem to hear the Divine behest, "Peace on earth—good-will towards men."

As we walk on till we approach the centre, where a view of the nave bursts upon the sight, filled with like objects of endless variety in form and colour, with a dense throng of human beings moving along below, the impression is one of overpowering grandeur.

The point at which every visitor should enter the building is the central entrance on the south side, immediately opposite Prince's Gate. The entrance is on a level with the road, and the floor is paved with large Llangollen flag-stones, as specimens of that material.

**THE TRANSEPT.**—After passing the pay-boxes (of which there are four on each side), the visitor proceeds through a pair of richly-gilt iron gates, by Cottam and Hallen, admirably calculated to adorn the entrance to any park, when one cannot fail to notice the tastefully-arranged beds of shrubs and flowers. Among the great variety of objects which at once strike the attention, is a statue of the Queen on horseback, by Thorneycroft.

On the right-hand side is a marble statue of the Marquis of Wellesley, by Weeks, which is a real work of art, in which the difficulty of combining modern drapery with the muscular development of the human figure is most happily surmounted. Near it is a child with a hoop, by the same artist, cleverly managed. Nearer the nave are three figures by Macdowell. The Eve is very fine, the position difficult, but truthfully expressed. The child at prayer is a beautiful figure, full of feeling, the hands being well executed, and the drapery graceful and soft. Beyond these, at the south-east corner of the transept and nave, is a colossal group in marble, by the same artist, representing Virginius and his Daughter. This is one of the noblest groups in the Exhibition; it is, indeed, an heroic work, of which any country might be proud.



The principal work of art in the centre, is a marble group, by Engel, representing an episode from the conflict of the Argonauts and Amazons. One of the latter is supposed to have been wounded in the fray, but rescued by one of her companions from the sword of her aggressor, who, in his turn, is wounded and overthrown. The moment chosen by Mr. Engel for the subject of his group is that in which the triumphant heroine, supporting her wounded comrade with her left arm, grasps a battle-axe with her right, and is on the point of dealing a *coup de grâce* on the prostrate Argonaut, when her hand is stayed by her more compassionate friend, whom an instantaneous awakening of the softer passion appears to have interested in his behalf. It possesses high merits, being most carefully and truthfully handled, while the chief figure is full of expression, and the extremities finely carried out.

We next notice the splendid Crystal Fountain of Mr. Osler,—the appropriate centre ornament of “A Crystal Palace.” It is 27 feet high, and rises like a splinter from an iceberg; it pours down an unceasing stream of water, with a delicious murmuring sound. It contains upwards of four tons of crystal; and the delicate splendour of the material is only surpassed by the fantastic beauty of its workmanship.

The fine specimens and groups of preserved birds, &c., most admirably executed by that eminent naturalist, Mr. John Hancock, of Newcastle-upon-Tyne, next arrest our attention. Three of these are classed together as illustrations of falconry. The first of these is the ger-falcon, hooded, and perched on the gloved hand, as carried to the field. The second represents the struggle between the same bird and its quarry. The heron, just struck down, lies quivering with pain, as the talons of its foe pierce its flesh; its wings are outstretched, and it appears to be vainly endeavouring to shake off its assailant, towards whom its head is turned, as if seeking an opportunity to strike him with its long sharp bill. The falcon, with extended wings, holds his prey with such a gripe as obviously will not relax, while, with head half-turned, he is keenly watching its movements, ready to meet an attack, and apparently preventing it by the terrors of his glance. The whole is so life-like that it would not be difficult to imagine that the contest is really going on as the spectator beholds it. The third is the same bird sitting gorged after his repast, with the bones and feathers at his feet, as if just ready to sink to sleep, yet with one eye opened wide in apprehension of danger. Next is a specimen of that formidable alpine eagle, the lammer-geyer, or lamb-killer, perched upon a rock. Black grouse and ptarmigan, a brace of each, are thrown together, as they would lie when just killed. A dead plover lies in an exceedingly natural position. The same may be said of a dead gull, over which hovers its companion, who appears to have just discovered it, and to be lamenting its fate. A leopard reposing, and two leopard cubs sleeping, are both executed in a superior manner. Mr. Hancock’s “scene in the tropics” would have filled Audubon himself with delight. The natural productions represented are those of the primeval forests which skirt the banks of the mighty South American river Amazon; and those who have read the descriptions of Waterton and other travellers might well imagine, for the moment, that they saw before them, as it were through some narrow opening, a small por-

tion of the scenery which they have so vividly depicted. Above the mass of decaying vegetable matter which the rank luxuriance of tropical vegetation is continually augmenting, appear gnarled trunks and twisted roots, about which various parasitical plants have entwined themselves. Above these rises the air-plant, over which are hovering the scarlet, and yellow, and the blue, and buff macaw; while amidst the flowers and fruit of the banana, are perched several small parrots playing with each other, or watching the doings of the insect tribes beneath. In one place two rhinoceros-beetles are engaged in deadly conflict, while from his haunt amidst the tangled roots, the terrible tarantula spider has rushed out and seized an unsuspecting butterfly. Beetles and other insects, in their coats of emerald, of jet, or burnished gold, are running in various directions amidst the undergrowth.

The cast, by John Bell, of Falkland, must not be overlooked. That by Marshall, of Milton and his Daughter, is broad and simple, telling its story with great feeling; but there is little grace and no beauty of person, while there is a disagreeable row of hands crossing the whole group.

We now notice an elegant bronze fountain, representing Cupid and the Swan; nor must we omit the cocoa-trees and shrubs, and a stoneware gardenier for flowers, supplied with a rich and beautiful collection.

A massive set of bronzed and gilt gates, cast by the Great Coalbrook Dale Iron Company, consisting of a pair of principal gates and two side ones, hung on iron pillars of a new construction, each of the four gates being cast in one piece, now crosses the view.

Beyond is a horse's head in plaster, by H. M'Carthy, full of spirit, and looking like part of a colossal statue. We may particularly notice the remarkable and successful treatment of the eye.

In the left-hand corner is a collection of azalias, in all the colours of the rainbow; and immediately opposite a Robing-room, fitted up by Messrs. Jackson and Graham for the use of her Majesty on her frequent visits, the furniture of which is covered with blue silk damask of Spitalfields manufacture, one portion being richly carved and gilt, and the other of walnut-wood. The carpet is of the richest velvet, the design embracing groups of roses and convolvuluses.

On the north-east side of the transept is a group in plaster of the Murder of the Innocents, in which there is good muscular display and some feeling. A model for a statue of Hampden, for the New Palace of Westminster, by J. H. Foley; and two by E. B. Stephens, one of Satan vanquished by the Archangel, and the other of Satan tempting Eve, are very fine. A figure in marble of Victory, by Rauch, of Berlin, possesses a good deal of merit, though there is nothing martial in it. It is, in fact, rather a drawing-room representation of the character.

Following our plan, we proceed up the western nave.

WESTERN NAVE.—A group in marble of Venus and Cupid, by Davies, nicely arranged, and the lines falling into one another gracefully. A bronze, after Foley, of a Youth at a Stream, is graceful, simple, and pure.

In the middle of the nave is a silk trophy, by Keith and Co., which stands as the type of the textile fabrics of Great Britain and Ireland. It was originally intended, that, as each trophy would

represent a particular class or manufacture, exhibitors in those departments should unite to form a complete type of their trade. Thus, the silk trophy was intended to have been contributed by the various manufacturers of Spitalfields, and would thus have been a fitting representation of the silk-trade in all its branches. Practical and technical difficulties, however, had to be overcome, in bringing together products so varied as those of the loom, even in one material; and Messrs. Keith and Co., as manufacturers of the largest kind of silk goods for furniture damasks, undertook the whole work. It is hung with the richest silk damasks, brocatelles, tabarets, &c., to the height of upwards of fifty feet; the sides of the base being filled in with mirrors of the largest dimensions, reflecting, at certain angles, the draped arrangement, and surmounted by flags and a banner, the central one being emblazoned with the royal arms. In order to effect the regular re-arrangement of the whole at stated periods, the structure is so contrived, that, by ladders placed inside, the requisite work can be effected with comparatively little trouble in a short space of time.

On the left is a cast of Sir William Follet, in his legal robes, by Behnes: simple, very lifelike, and full of character. To the many admirers of this most able lawyer, whose talents were only equalled by the gentle courtesy of his nature, this monument must be an object of great interest.

Further on, in the middle of the nave, is a sort of Mosaic figure, in marble, of a Dog treading on a Snake, by Wyatt, eccentrically treated, true to nature, and pleasing, but very quiet. Near this is a bronze group of a Horse and Dragon, by the same artist, which is clever, but the horse is rather diminutive in its proportions, and shows none of the sinewy action of strife.

The trophy of Canadian timber is an interesting object, exhibiting a number of specimens of valuable wood, cut into slabs, the one side polished and varnished, so as to show their wrought and unwrought character, the whole surmounted by an Indian canoe. This shows some of the natural advantages to be derived from our transatlantic colonies.

A model of the Auditory of the Opera House, as seen from the stage, preserving most minute details of decoration.

The next object worthy of especial attention is a beautiful specimen of inlaying with copper, zinc, and brass, used in contrast, though the engraving of the faces of the figures is inadequately finished.

Passing the large mirror, with its elaborately-ornamented framing and gilding, the spandril from Hereford Cathedral, placed at the back, cannot fail to attract the attention of the lover of ecclesiastical decoration. Mr. Thomas's fountain, surmounted by Acis and Galatea, surrounded at the base by emblematical figures, is one of those objects which, if placed in the open air, would appear much better than it does in its present position.

Here is also to be observed an interesting specimen of church restoration. It consists of a portion of the monument of Philippa of Hainault, Queen of Edward III., in Westminster Abbey. It is executed in English alabaster, from the drawings, and under the direction, of Mr. Scott, the architect to the Abbey, and from the remains which have been found embedded in an adjoining vault. It may be mentioned that this monument was executed in the year

1370, by one Hawkin Liege, from France, at a cost of £133. 6s. 8d., or, when reduced to our present currency, about £2000. The niches were occupied by thirty-two statuettes, representing different branches of the family, of which a nearly accurate list is preserved. Those shown in the portion now exhibited (which represents the head of the altar tomb) are Edward the Black Prince, Lewis Emperor of Germany, King Edward III., John King of France, and William Earl of Hainault. Besides the effigy of the Queen and the statuettes above named, there was a vast number of angels in the tabernacle-work and elsewhere, so that the whole monument contained not less than eighty figures, and, from the remains that have been found, must have been a very superb work of art. The restoration has been made with the greatest care, and it has a really rich and elegant appearance. The statuettes and angels are executed by Mr. John Philip, from all the authentic sources which accurate investigation has been able to discover.

Next is rather a curious rough model of the Orchestra of the Sacred Harmonic Society.

Beyond this, is one of the very best models in the Exhibition—that of the Church of St. Nicholas, at Hamburgh, which is really beautiful.

Further to the west stands a Cross of Caen stone, by Mrs. Ross, of Bradenburg. On the one side, in the chief compartment, is represented the Crucifixion; on the reverse the elevation of the Serpent in the Wilderness. On the arms of the Cross are groups of the Good Shepherd, and the Return of the Prodigal Son; and down the standard of the Cross are the heads of the four Apostles, and of others of the Disciples. It is beautiful in its proportions, and most worthy of a careful inspection.

On the right are two pillars of Madrapore marble, which are fine specimens.

Mr. Jordan claims for wood-carving by machinery the superiority in solidity of material and cheapness of manufacture. His "parclose screen" is a marvellous proof of the satisfactory working of his patent machine, even in the difficulties which arise under cutting. The ornamentation and the ground are all of a piece from one side to the other. Its lower compartment is too high to be placed in a chancel. The compositions of game deserve particular mention, and though, doubtless, finished by hand, the tedious original stages were submitted to the manufacturing process in the first instance.

The "Eldon and Stowell" group, two colossal portrait statues of those eminent brothers, the late Earl of Eldon and Lord Stowell, is well placed in the central avenue, as the work is a bold and massive one. The draperies are grand in their arrangement, and there is a repose in the whole subject which is highly satisfactory. The artist, the late M. L. Watson, was not known or appreciated to the extent which this work proves he ought to have been.

We next come to an enormous circular piece of mahogany; also some immense crystals of alum, Rochelle salts, nitrate of potash, and soda, exhibited by W. W. Pattinson, and spermaceti, forming the chemical trophy. Beyond which is the great clock, by Dent. It is intended for a large church, and is capable of working four dials twelve feet in diameter. It strikes the hours on a bell of two tons, with quarters to correspond: the wheels are all of cast iron, except the scape, which

is not driven by the clock, but by a small spiral spring, which is wound up by a *remontoire* action in the train, which also causes the minute-hand to move by a visible jump every half-minute, so that the time can be taken on the face to a second. The pendulum is compensated, and its bob weighs two cwt. It also keeps going while being wound up.

After this comes a brilliant trophy of cutlery from Sheffield, in a glass case, in which many beautiful articles of this kind are fancifully arranged. It contains 230 pairs of scissors of every size and pattern, grouped and mounted upon a white ground. The centre object is a pair of huge scissors, 22 inches long, the bows and shank representing in outline two crowns, the upper one surmounted by a thistle. All the ornamental work is wrought with the file, some portions of the surface being chased. This object is by far the most expensive pair of scissors ever produced in Sheffield. On each side of these appears another pair, nearly the same size, and scarcely less beautiful or costly. One pair represents, in chasing, the bruising of the serpent's head; in the centre is wrought out with the file the Prince of Wales's feathers, and the bow is constituted of the emblematic group of the shamrock, rose, and thistle, and some curious scrollwork, all wrought out with the file. The other lateral pair of scissors is likewise beautifully chased. The department conveying the greatest amount of instruction to the general spectator is in the left-hand lower corner. It illustrates the process of the scissors' manufacture in ten distinct stages: 1. a plain piece of steel: 2. the mood, after the first process of forging; 3. the forging complete; 4. filed; 5. bored and sharpened; 6. ground; 7. bow got up; 8. fitted; 9. glazed; 10. a finished pair of ordinary barber's scissors. Over these objects there are specimens of print, woman's, shaping, draper's, and nail scissors, all glazed; a pair of dandy's whisker-scissors, with a comb fabricated at one side; a variety of lamp-scissors, vines, flower-gatherers, pruning and slide pruning-shears and horse-trimmers, all with very long stems: massive tailors' shears and American ditto. The right-hand side of the case is headed with specimens of fancy shaping and bankers' paper-scissors, hair and nail scissors, and a great variety for gentlemen's dressing-cases. In the centre of this side the most striking object is a pair of 16-inch fancy nail-scissors, ornamented with etching; these, as their immense size suggests, are designed only for show. Beneath them is a group of surgeons' scissors, carved, angular, and distorted into every imaginable shape for difficult operations; their very appearance being sufficient to create a shudder. Included in the foregoing are all the ordinary and most useful varieties. There is also to be noticed a sportsman's knife, containing eighty blades and other instruments; also one three-quarters of an inch long, with fifty-one blades and other instruments; also a case containing twelve perfect pairs of scissors, yet so small that they do not weigh half a grain.

The next object worthy of notice in the nave is the Coalbrook Dale ornamented rustic dome, which is a splendid specimen of our iron-casting. It is 20 feet in diameter by 30 feet in height, and is adapted for glazing as a green or summer-house. It contains the figure of the "Eagle-slayer," with an eagle pendent, and is surmounted by a statuette of *Æolus*, by John Bell, who designed the entire structure.

An equestrian group, representing a crusader mourned over by his mistress. The steed of the slain warrior is, in a truly Homeric spirit, associated in the expression of his mistress's grief.

In this part of the nave will be found two lanterns for lighthouses, well worth inspection; as also a monster telescope, erected by Mr. Ross, the optician, who has constructed the glasses for it, one of which is 12 inches in diameter: the iron-work comes from the establishment of Messrs. Ransome and May, of Ipswich.

The feather trophy, arranged by Mr. Adcock, is remarkably beautiful, and looks ornamental, even amidst the trying collection of bright objects around it.

A trophy, composed of American furs, partly contributed by the Hudson's Bay Company; the chairman of which, our readers may remember, promised, last year, at the first meeting in the Mansion-house, respecting the Exhibition, "that the finest beaver that could be obtained, in the Company's territories, should be forwarded to the Exhibition." Mr. Nicholay has also tastefully arranged a number of magnificent skins of different animals against the gallery.

A terra cotta model of the church of St. Stephen, showing its applicability to the purposes of decoration in building.

The next object, a model made by Mr. Jabez James, of Broadwall, of a suspension-bridge erected over the river Dnieper, at Kieff, in South Russia, designed by Mr. C. Vignoles, is the most perfect thing of the kind in the building. A similar model to the one exhibited was made for the Emperor of Russia, and cost upwards of £12,000. The scale is  $\frac{1}{8}$ th of an inch; all the details are imitated with such nicety, even in the size of the nails and the threads of the screws, that from it a perfect copy of the original bridge might be executed on a full scale, without any written description. The abutments take to pieces, to show the construction of the masonry, and the chambers for the chains. It contains 6,880 pieces of wood, and 87,097 pieces of metal. Before the construction of the suspension-bridge at Kieff, a bridge of boats was in use, the river being 1,200 feet wide. Mr. James, the modeller, received a ruby and diamond ring, valued at £200, from the emperor, on the arrival of the first model, which is now set up in the Winter Palace at St. Petersburg. Near to this is the model of the bridge erected over the Menai Straits, one of the most remarkable triumphs of modern art, in which Mr. Stephenson even added to the great reputation he had already achieved. Between these models is exhibited one of a bridge being erected over the river Wye, at Chepstow, by Mr. Brunel.

The large and massive fountain, by Seeley, constructed of artificial stone, will astonish and delight a large number of visitors. The whole work is at once an example of skill in construction and fitness of design.

A model of the Undercliff of the Isle of Wight, exhibiting the fields, houses, gardens, roads, woods, and mills, is an interesting geological representation, on a scale of 3 feet to a mile, by Captain Ibbotson. There is also one of the Plymouth Breakwater, showing its action in a storm.

We now come to the model of the Liverpool Docks, one of the most interesting objects of this kind in the Exhibition. This admirable work originated in a desire on the part of certain patriotic gentlemen of Liverpool, that this great port, the outlet of so large

a portion of our trade, and the scene of so important a part of the commercial transactions of this country, should be fairly represented in the Exhibition. The idea has been exquisitely carried out by Mr. John Grantham. It is 40 feet in length, 10 feet wide, and on the scale of 8 feet to a mile, and represents a surface of five miles. The docks are represented as filled with 1,600 tiny vessels, fully rigged, and the model altogether forms a very beautiful object, and impresses us with the magnitude of Liverpool as a port. The model is chiefly cut out of wood, the finer portions being constructed of paper, and the water represented by glass stained of a greenish tint, and silvered in order to reflect the ships which float on its surface. Its cost is stated to be £750. It is supported on an appropriately-designed base, formed of elephants, cast in iron, from the backs of which the columnar supports of the roof arise; pediments, filled with appropriate decorations, in imitation of bas-reliefs, being at the ends and centre. It is a work that does honour to the merchant princes of Liverpool, and it is intended to be eventually deposited in St. George's Hall, as a record of this assemblage of all which constitutes the basis of its greatness, its wealth, and practical utility.

The last object in this part of the nave to which we would recommend our readers' particular attention, is an immense square of plate-glass, exhibited by the Thames Plate-glass Company, 18 feet by 10 feet. The difficulty of producing this square was so great, that the workmen broke the three first they attempted to make.

Retracing our steps down the nave, we return eastward, examining the courts on our right hand.

**SOUTH SIDE OF NAVE.—WOVEN FABRICS, CLASS 18.**—We first come to woven fabrics. In this branch the variety, excellence, and cheapness of the articles shown place us far before the rest of the world.

In dyeing and designing, we may not, perhaps, quite equal our continental neighbours; but all intelligent visitors to the Exhibition may readily satisfy themselves that our manufacturers have made enormous progress of late years, and that there are few fabrics made by them not equal in every respect to those of the continent, while, in that most important of all points, cheapness, they greatly surpass their rivals. Our retail dealers have too long been in the habit of pursuing the short-sighted policy of pandering to the prejudices of their customers in favour of foreign fabrics, and of selling the products of the British manufacturer as foreign. The silks of Manchester and Spitalfields, the embroideries and cambrics of Ireland, and the laces of Nottingham and Limerick, are constantly sold in this country as the productions of Lyons, Switzerland, and Brussels. It will be one of the good effects of the present exhibition to show our fair countrywomen the prejudices under which they have laboured, the pardonable impositions to which those prejudices have subjected them, and the real excellencies of the manufactures of their own country.

We proceed onwards, and find exhibited every kind of printed cottons, ginghams, muslins, hosiery, &c. Among those worthy of especial notice, are the prints of Black, of Glasgow; the cottons and delaines of Simpson and Young, of Manchester; and specimens of Spitalfields dyeing in silk, cotton, and wool.

In one of the longitudinal passages exhibiting furniture-prints on one side, there is a display of printing on silks on the other, which viewed immediately in front are very dull and dingy, thus affected by the calico covering of the building; but viewed from the side at a moderate distance, the colours become exceedingly bright. Near these silks are some furniture-printings, by Swainson and Denny, remarkably rich, many of the patterns being exceedingly graceful and elegant.

Perhaps the most beautiful things in this department are the printed barèges, by Hargrave, of Manchester. One of these is the product of *twenty blockings*, and presents some groups of flowers which almost rival painting.

A curiosity of manufacture is exhibited by Messrs. Thos. Houldsworth and Co., of Manchester. In the contribution of this house there are specimens of cotton yarn ranging from No. 100 to No. 700 in single yarn, and No. 100 to 670 in double yarn, or lace thread. These figures express the number of hanks to a single pound weight, each hank being 860 English yards; and the last-named number of 700 in single, and 670 in double yarn is the triumph of cotton spinning for all practical purposes; since we find that a pound weight of cotton is elongated, in the first instance, to a length of 338 miles, and in the other, to a doubled thread, 324 miles, at a cost of £28 as the price of a single pound weight. The most remarkable example, however, is the specimen shown as No. 900, both of yarn and thread, as a curiosity, by which a single pound of cotton is extended to 430 miles. This is useless for all manufacturing purposes, being too fine to be serviceable, or even capable of being handled. Still it is all it professes to be. The fineness of the cotton yarn used for lace-making has always been a great desideratum, and this firm has had a world-wide reputation for spinning the finest numbers. So late as 1840, 350 was the finest yarn attempted. In 1841, Messrs. Houldsworth spun 450, which was considered as the limit, until the Great Exhibition stimulated a further trial; and the result is now before the public, as palpable a fact as the building in which it is exhibited.

There is a fine show of diaper and other linen by Pegler, of Leeds, among which is a cloth designed for the communion-table, composed of linen weft and silk warp, presenting a very magnificent appearance. The design is exceedingly elaborate, containing the "Saviour administering the Last Supper to his Twelve Apostles," as a centrepiece. The border, running right and left, is composed of Corinthian scrolls, with the passion-flower, and wheat, and grapes. The middle contains the Bible and the mitre. The sides have each a large cross, with I.H.S., with gloria.

FLAX AND HEMP, CLASS 14.—Going on, we find, in a long narrow compartment, a large collection of coarse linens, sacking, bags, sheeting, twine, and, under a glass case, some needlework in flax yarn, in imitation of lace, which is well worthy inspection.

Pursuing our course eastward, we come to the contributions from Ireland. These are chiefly in sheetings, diapers, and linen cambrics. Among these are some really beautiful articles, by Mr. Hemming, of Belfast. He has produced some linen cambric as fine as anything of the kind ever woven in France, and which we trust no prejudices will hereafter prevent having a fair competition with the French.



He also exhibits some printed linen cambric for dresses, which are very superior to similar fabrics of cotton, and a very thin straw-coloured lawn, for ladies' and children's morning summer-dresses.

In front of the lower staircase to the gallery is a loom, with a piece of figured Irish poplin in it; also a display of figured silk, which, for richness and beauty, may be compared with anything of the kind in the Exhibition.

WOOLLEN FABRICS, CLASS 12.—West of the stairs begin the Woollen Fabrics. Cloths of all kinds and qualities, kerseymeres, mixed goods, blankets, horse-cloths, and coats, challenge our attention. Some shawls in South American wool are peculiarly soft and warm, though a little shaggy in their appearance.

Halifax and other towns contribute some splendid specimens of curtain damasks; and in a recess near the nave there are some Glasgow shawls in imitation of Indian, well worth a visit.

Bradford furnishes most interesting specimens of prepared flax in a great variety of colours, and of coloured wools, which fill a large case, near which sits a gentleman ready to answer any questions with regard to them.

There are also from Bradford, among the worsted goods, many articles beautiful in colour and texture, especially those of Schawnn, Kell, and Co., and of Titus Salt.

In a recess is a great display of waistcoat-pieces, at the back of which are some beautiful cashmerets, by Thornton and Frith, of Leeds, for vests and dresses. One kind, with silk warp, is very beautiful, and admirably suited to many purposes of ladies' dress. Also from Leeds are specimens of very fine bright colours in some billiard-cloths.

Mr. Walker, of Huddersfield, at the south-east corner of the woollen compartments, exhibits some very curious cloths, some with two colours, one on each side, and some resembling very much indeed the shaggy coat of a wild animal.

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We next come to the HARDWARE OF SHEFFIELD, CLASS 22, in which department of manufactures our own country is at the head of the rest of the world. Messrs. Stuart and Smith's court of grates, of every form and style, must attract attention. A drawing-room stove, in painted china and or-molu, with encaustic tiles, is remarkable. There are three medallions in gold, representing Youth, Manhood, and Age, in the portion of the frame under the marble chimney-piece. A collection of grates and fireplaces, exhibited from the Green Lane Works, Sheffield, are worthy of especial attention. The centre fireplace and grate of the three which stand in the nave, cast in iron and ornamented in or-molu, with pillars at the side, is a most beautiful object, and a very fine specimen of iron-casting. On the right as you enter the hardware-room, is a case containing the preparations of steel wire, showing the various stages in the process of manufacturing needles. The Etna Works display a great variety of circular saws, files, hammers, adzes, &c. We may also notice a model of the Cyclops Works, and specimens of iron and steel suitable for engineering, tool-making, &c. An assortment of files and rasps, from 1 to 46 inches in length; a case of scissors and shears

of every variety, highly ornamented, with specimens arranged, from the rough steel to the finished article, are exhibited by Hunter. Messrs. Turner and Co. display a pair of Albert venison-carvers, with stag antlers; the Prince of Wales' sailor's knife; razors, and various kinds of saws. Another assortment, forwarded by Turton and Son, includes illustrations of steel-manufacture from Swedish bar iron. The same firm also contribute a monster steel ingot, weighing upwards of 1 ton 4 cwt., intended for one of a pair of piston-rods for a marine engine. It consists of the contents of forty-eight crucibles, each charged twice with 80 lbs. weight of steel. The operation was performed by forty workpeople, and the pouring the melted liquid steel into the mould was accomplished by three men in eight minutes.

We purposely pass the Furniture court, so as to continue our notice of the hardware, and have to direct the visitor's attention to the beautiful display by Messrs. Jennings and Bettridge, of their *papier-mâché* goods. These gentlemen commenced business some thirty-eight years since, then manufacturing only tea-trays: advancing gradually, they achieved objects in every variety of useful elegance. They now produce goods of almost every class and order of which the process is capable. Amongst their contributions, what we should especially notice are—the Victoria Regia cot, in which this fine flower is beautifully and artistically introduced; a pianoforte, the keys of which are constructed of tortoiseshell and mother-of-pearl in a tasteful and novel fashion; an exquisite Oriental chair; and an ink and envelope stand, enriched with original groups of deer and hounds, by M'Carthy.

We also pass another elegant collection by Clay, and enter the next

**HARDWARE, BIRMINGHAM, CLASS 22.**—An object well worth examination is a collection of Gillott's pens, in every imaginable variety, steel, gilt, and plated,—some so small as to be hardly perceptible in a box, while others are much too large to be useful except as curiosities. There is also a collection of door-locks, buttons of every shape and size, and a superb specimen of fillagree-work, some steel fire-irons most beautifully finished, and a display of carriage-lamps, by W. J. and H. Deyard.

On passing to the next court, Messenger's collection attracts attention. The domestic group of the Queen and the Prince of Wales, in or-molu and bronze, modelled by John Bell, is striking: also a portion of a beautiful chandelier in bronze, designed by Mr. Gruner, for the summer-house, Buckingham Palace. The proportions of this, unlike most things of the kind, are very agreeable; the parts intended for the candles are composed of vine-branches running down into the base, with crouching panthers, introduced to harmonize with the other decorations of the summer-house, as is also the group of young satyrs embellishing the base; the upper part consists of a female figure supporting an urn on her head. The whole is executed with very great care and taste.

We now notice the display by Mr. Potts, of a variety of bronzed and lacquered gas-lamps, of new and tasteful patterns; also a girandole hanging on the wall near the nave, in a highly-ornamented bronze frame, with two figures in Parian. It is a beautiful and

finely-finished work, and is executed for her Grace the Duchess of Sutherland.

Passing by a quantity of iron bedsteads, you cannot fail to admire Mapplebeck and Low's display of grates: a large one, in the centre, is worthy of particular attention.

A cradle in the form of a shell, by Winfield, in gilt bronze, lined with blue silk, covered with thin drapery suspended from the hand of a figure with wings, near which is a very pretty rocking-chair of a remarkably light appearance, claims commendation.

The Coalbrook Dale Company, at the entrance to the next court, display their collection of grates: one of burnished steel, with white enamel, supported on each side with gilt pillars, and illustrating scenes from the sports of deer-stalking, boar-hunting, and hawking, and various groups of stags, all designed by Hawkins: here are also some strong iron safes, which would quiet the uneasy rest even of a "Scrooge," by Milner and others.

A word in favour of Messrs. Chubb, whose admirable contrivances for the security of our doors, boxes, and houses, justify all encomiums. Their Detector locks and latches, first patented in 1847, though well known, will be gladly recognized by many visitors who have tested their undoubted utility. As no key or instrument, except the true key, can release the "Detector," discovery must ensue on any attempt at obtaining an illicit entrance. A quadruple lock, patented in 1846, for a banker's strong-room door, consisting of a combination of four separate and distinct locks united in one, and all acted upon at once by a single key with four bits, is rendered even more secure by a check lock throwing a hard steel plate over the large keyhole, giving in all the security of thirty tumblers. Among the more elegant efforts of the same firm, we may mention some *recherché* specimens of Norman, Gothic, and Elizabethan locks, with rich steel and or-molu mountings, and ornamented keys, well adapted to ecclesiastical buildings. Among the iron safes, the patent well-safe, by means of which a safe containing valuable property may be lowered to any distance below the surface of the ground, and secured by a fire-proof door and framework at the mouth of the well, is also well deserving of attention.

In the same court, a curious, historical, self-acting section is intended to illustrate the rise and progress of the art of making locks from time immemorial. It contains the movements of the most celebrated inventors. The series of locks and their connected mechanism contains upwards of three thousand parts, which are put in motion by turning the key on the top section. It is executed by Aubin, of Wolverhampton, and cannot fail to prove a great attraction to all who take an interest in this department. Some trays, exhibited by Walton and Co., the designs of which are exceedingly well executed: a set with Retsch's Outlines to Faust, and another called the "National," introducing scenes from the histories of England, Scotland, and Ireland, are equally deserving.

Leaving the Hardware Division, we return to the FURNITURE, CLASS 26,—a display of many articles of the highest finish and beauty, in our opinion competing successfully with the very best foreign productions of this class. First among these are a quantity of carvings, and other decorative works, by Mr. Rogers, of Carlisle-

street, Soho-square. A carving of English fruit and flowers, &c. (as a border to a glass), 11 feet high, 7 feet wide; a wreath of flowers in boxwood, the property of Mr. N. Wilkinson, in a case containing twelve specimens of boxwood carvings; head of a crosier; four grotesque masks; a bracket, in boxwood, James I.; a casket, in various woods, carved in scrolls, foliage, monograms, and crests; an emblematical cup, William III.; a royal trophy, 5 feet by 4 feet; four brackets in satin-wood, composed of aquatic flowers, rushes, reptiles, and herons; two gold ornaments, enriched with white porcelain; specimens of flowers used in the reredos of St. Stephen's, Walbrook; a boldly-carved oval in pear-tree; a lady's satin-wood reading-table; a glass bordered with light flowers, entwined with moths and insects; a lion's mask; a bunch of dead game; shell-fish; an Italian canopy; an elaborate salt-cellar and spoon, in boxwood; a toilet-glass, suggested by her Grace the Duchess of Sutherland; Sir Walter Scott, in boxwood, begun by Joseph Enger. A wall-decoration by Mr. Moxon, whose works at Buckingham Palace are well known, will attract attention. It represents the end of a drawing-room in the Elizabethan style. The fittings, glass frame, and exquisite chimney-piece containing a medallion of Chaucer, and groups from his most celebrated poems, are by Mr. Thomas, whose fertile genius has so much enriched the New Palace at Westminster.

There is a very beautiful sideboard, by Lerien, made of New Zealand wood, with insertions of highly-finished carvings in boxwood. To the left of this, on the same stand, is a massive sideboard, by Poole, of carved oak, with panels of bronze basso-relief figures, which is exceedingly fine, and valued at £500.

Among the contributions of Messrs. Jackson and Graham is a magnificent sideboard of English oak, in the style of the Renaissance. It is 10 feet in length, and 12 in height. The pedestals at each end have pilasters of boy figures, beautifully carved, with the attributes of hunting, fishing, Summer, and Autumn; and in the panels of the doors are trophies in high relief, exquisitely carved, of the same subjects. The back is of plate-glass, silvered, the centre being elliptic, and the frame having a female mask with festoons of fruit, finely carved in the entablature, surmounted by a richly-carved shield, with boys on both sides as supporters; on each side of the centre are arched divisions ranging with the pedestals, connected with the centre by cornucopiæ of fruit; in each division is a shelf, supported by elegant carved brackets, the cornice being supported by thiermed pilasters, richly carved, with an elegantly-formed vase placed at each extremity over it. Near it is a dwarf bookcase, in fine Italian walnut-tree, in the same style, but less elaborately carved, the top being arranged for the reception of bronzes and articles of *virtu*. They also contribute a beautiful library sofa, of a luxurious form, the ends being supported by two thiermed female figures, finely carved in walnut-tree; and a dining-room chair, with a high back, upon the top of which is a shield, with fawns in a reclining position as supporters, covered in rich velvet, and ornamented with fringe round the seat.

Hunter, of Moorgate-street, exhibits a sideboard, cellaret, and two chairs, massive and rich, and well worthy of a permanent place in some of our baronial halls. The sideboard is of fine English walnut-tree, carved from the solid wood; its extreme length is 11 feet 9 inches,

and width 4 feet; and it is so constructed that it is capable of being easily removed to any distant part. It is supported on two cornucopiæ, terminating with dolphins' heads in front, and legs of an elaborate character behind. The cornucopiæ are richly carved with various fruits and flowers, which are surmounted by two Bacchanalian heads representing Youth at one end, his head encircled with reeds, emblematical of Music, and Old Age, at the corresponding end, with a vine-wreath round his brow; both of which designs were carved from one large block of wood. In the centre of the back is Bacchus, indicative of full maturity or manhood, surmounted with the palm tied by a riband bearing the inscription "*Possunt quia posse videntur*," implying that anything can be accomplished with perseverance and determination. Over the head is the skin of a fawn, representing good cheer; on each side of the centre, the Vine, the Hop, and the Oak, all vigorously carved, flow in rich clusters, with the Hound on the left, and the Wild Boar on the right emerging from the foliage—emblematical of the Chase—the Boar with a branch of oak in his mouth; this, with a brilliant mirror, completes the back. On the front is a tablet encircled with a wreath of oak, having the year 1851 inscribed on it, commemorative of the present eventful period; from under which the Vine, cut out of the solid wood, entwines over the massive moulding right and left, connecting itself through holes with the cornucopiæ, thus forming a complete and uninterrupted line of ornament throughout the whole sideboard. A beautiful Black Marble, in one slab, from Galway, Ireland, having a handsome moulding, forms the table part: this is considered a most perfect specimen, and was procured from the quarry expressly for this work of art. The cellaret underneath is of a similar classic style to the sideboard, and is embellished with grand sylvan emblems. The four sides are bold massive shields, supported at each corner by four trusses, terminating with dolphins' heads, and over the trusses are goats' heads, the horns resting on the top, forming handles to it; from each of the trusses the oak and the ivy alternately spring. On the front is a Fox emerging from brambles, making an effort to seize some grapes which are hanging from the top—illustrative of the old fable. The lid is encircled with the vine, which springs from the centre, forming a complete wreath, meeting at all the angles. The cellaret will contain twenty-eight decanters or bottles of wine, besides seven divisions which are made for the reception of ice, so arranged as to keep every compartment cool. The two chairs were made, though different in pattern, for the object of showing what would harmonize with the sideboard and cellaret—one partakes of the sylvan character, having goats' heads and feet forming the front of the seat, while the other is richly ornamented, with designs of a strictly classical character.

On the east wall in this court is spread out an enormous piece of polished veneering, of English oak. Beneath it are some articles by Gillows, of the very highest finish, consisting of a sofa, covered in leather, a splendid library-table, and an extremely beautiful veneered loo-table.

There are some beautiful articles by Holland and Dowbiggen. A large looking-glass and table challenge especial attention, from their richness and freshness of style. The frame of the glass consists of lilies and bulrushes, with storks at each basis, in gilding, strongly

contrasting in the different tints used, and is really beautiful. The ornamental filling-in under the table is curious, but greatly inferior to the frame of the glass. They also exhibit a commode, which is very elaborate and beautiful. The panels are inlaid in the Elizabethan style, with insertions of porcelain paintings, divided by pilasters of china and or-molu; the whole front completed in its ornamentation by fine carvings in oak, surmounted by a cornice of satin-wood and or-molu.

There is a charming inlaid loo-table, by Watson, in which the bouquets of flowers and groups of figures are shaded almost with the delicacy of a painting.

**HARDWARE, CLASS 22.**—Continuing our course westward, by the passage marked B in our plan—which runs behind the cotton, hardware, and furniture courts—in which various kinds of hardware are exhibited; running the entire length of the building from the Canadian Division, we notice,—

Sidney Flavel's Patent Kitchener, from Leamington, and a stove of polished steel and gilt, in a statuary and marble mantelpiece, covered with groups of fruit and flowers. An immense circular saw, from Aiken and Son, of Birmingham, a case of glass bellows, all highly decorated. Passing a quantity of ranges, we notice a thirty-two pound gun, of six feet, weighing 25 cwt., used with shells, grape, canister, and solid shot; also another larger one, measuring nine feet four inches; a ten-inch gun, used with hollow shot, shells, and grape, mounted on a carriage. These fearful specimens of destructive industry are sent from the Low Moor Iron-works.

Passing some sugar-mills, we come to—

Savage's Alarum Bedstead, a most curious contrivance, which daily attracts crowds, to the great derangement and inconvenience of one of the sappers, who submits to the practical joke with a rueful countenance, but patience quite exemplary. A clock, to which an alarum is attached in the usual manner, is in connection with the head of the bedstead, and, by some curious machinery, should not the sleeper leave his bed immediately on the alarum ringing, he is thrown out, but in an upright position, by the lower end of the bedstead suddenly sinking.

Mr. Masters, of Regent-street, exhibits some ingenious machines, by which the operation of frigorific mixtures is brought to bear on the substances to be frozen, so that they may be used with very little trouble, and with the greatest effect. The preparation intended to be converted into ice is put into a white metal cylinder, that is placed on a pivot, to which a rapid rotary motion may be given by a handle. Outside that vessel there is a space, to hold the freezing mixture, and on the exterior of that there is a hollow cylinder, to hold pure water. The operation of freezing in this machine depends on the expansion of the substances employed as freezing materials during combination; for all bodies, when expanding, absorb heat. A mixture of Glauber's salts and oil of vitriol will cause a reduction of temperature equal to 47 degrees of Fahrenheit. By such a mixture, water, at a temperature of 70 degrees, may be reduced to 9 degrees below the freezing point. There are other frigorific mixtures much more effective, but the most available in practice are the cheapest and the most convenient in use. In all cases, the more

rapidly the combination of the substances takes place, the greater is their frigorific effect; and in the freezing-machines of Mr. Masters the operation is expedited by the rotary motion, so that, in a few minutes, an ice, ready for the table, may be produced. The rotary motion is also made to agitate the strawberry-cream, or other preparation; by which means it is more intimately blended with the ice, and the separation of parts that would otherwise take place is prevented. By the same process, the exterior hollow case of water becomes converted into a cylinder of ice, that may be removed, and placed on the table, for a wine-cooler.

In a recess to the right are shown several horse-shoes, amongst which, one forwarded by T. Clarendon, designed to permit the natural expansive action of the foot of the horse deserves attention. A variety of locks, door-plates of every kind, finish this part of the hardware section; and turning to the left, we continue our perambulations through the courts appropriated to the agricultural implements.

AGRICULTURAL IMPLEMENTS, CLASS 9.—We now enter upon the most interesting section for those who are attached to agricultural pursuits, or to whom the “landed interest” is still a subject of affectionate solicitude. The collection of agricultural implements in this department is bewildering for its amazing variety; and it is difficult to conceive any condition of tillage which cannot be achieved by the machinery herein contained.

As to a minute enumeration of a quarter of the objects worthy of notice in this section, it is utterly impossible; but a notice, as we walk along, of a few matters of pre-eminent interest, may not be unacceptable.

Mr. Crosskill exhibits a collection of cart and waggon wheels. Next to which, the stand of Messrs. Barrett and Co. claims our notice. It contains almost every agricultural implement in use; among these, their improved threshing-machine, made entirely of iron, with an ingenious contrivance for adjusting the concave to the drum; their patent horse-gear, and a valuable machine for bruising gorse. We may also notice an excellent portable steam-engine, and a beautiful model of a threshing-barn, complete in all its details. Opposite is the stand of Messrs. Ransome and May, of Ipswich, to whom praise is due for their judicious substitution of iron for wood in the frames of implements of husbandry. By this, neatness and lightness, as well as greater strength, are invariably gained.

Messrs. Garrett and Sons exhibit some improved agricultural implements. One is a threshing-machine and straw-shaker, being made portable, with an arrangement which permits the shifting of the connecting-bar, so that it may be worked on either side of the stack or barn. The requisite speed of the drum is gained by three motions, or pairs of wheels, instead of two only, as was formerly the case; and this alteration, combined with the general improvements throughout the machine, has considerably added to its ease in working, and lessened the wear and tear. The shaker is for the purpose of thoroughly separating from the straw, all corn, leaf, clover, &c., that may be amongst it, and for carrying off the straw after it has passed out of the machine, without any loose kernels amongst it, producing a valuable increase of calder for feeding stock, which is

otherwise lost for that purpose. The screen is adapted for riddling all loose ears, leaf, and short straws, and separating it from the corn and chaff, while the winnowing-machine will so far dress it, that once passing it through an ordinary dressing-machine will render it fit for the market. Also a four-horse-power machine, which will thresh out forty bushels of wheat per hour; and a mill for crushing oats and grinding barley, the revolving cutters or rollers of which are of steel, and by an excellent contrivance are kept parallel with each other, or with the plates against which they work. The cutting cylinders, as also the plates, may be set at any distance from each other, as circumstances may require, to grind, or crush fine or coarse, for horses, bullocks, sheep, or pigs, linseed, oats, malt, barley, beans, or peas. A rape and linseed-cake crusher, which is made with two sets of working barrels for breaking cake into pieces for cattle or sheep, or powder for manure, the barrels being regulated as required by two pairs of screws, ought also to be examined.

Messrs. Crosskill exhibit their contributions on an oak-painted stage. They are deserving of special attention, comprising small excellent barn machinery, a universal mill for grinding corn, some good specimens of drills, an improved chaff-cutter, &c. All who take the trouble to examine this stand will find themselves delighted with the implements displayed.

Messrs. Morewood and Rogers's patent galvanized zinc, for farm-buildings, is worthy of attention.

Mr. Tyson, of Selby, contributes a model of farmsteads and buildings, where steam power is used. It displays an English farm-yard, constructed on a scale of 2 feet to an inch, and covering an area of 100 square feet. On the north side are situated the most lofty buildings, in the centre of which stands the barn, containing a steam-engine, threshing-machine, chaff-cutter, and a pair of millstones for grinding corn for the cattle. Behind the barn is a lofty shed, sufficiently capacious to contain a large corn-stack, which is brought in at once by a truck on a tramway from the stackyard in the rear of the buildings. At the west end of the barn is a granary, under which are the cart-sheds; and at the east end are the piggeries, surmounted by the fowl-house. West of the area stands the stable for the draught horses, behind which is a shed for agricultural implements. The wheelwrights' and smiths' shops form the angle in the south front. Symmetrical with the stables, on the east, are the cow-houses, cattle-sheds, infirmary, and office for the farming bailiff. The south front is occupied by the hackney-stable, coach-house, and loose boxes; and, in the centre, the turnip and root-house, over which is a dovecot, surmounted with a vane and the four cardinal points of the compass. Across the centre of the area, running north and south from the root-house towards the barn, we have the sheds for fattening beasts, which are arranged in parallel lines, head to head, with a tramway between them for the more expeditiously supplying them with food. Between the barn and the fattening-house is the steaming-house, where all the food for the cattle, pigs, &c., is cooked by steam, from the boiler of the engine, whence it is taken by tramway to the place where it is required. Above the steaming-house there is a large tank for the supply of water to the cattle-troughs by means of pipes and taps. The tank is replenished by the steam-



engine from a reservoir, into which is conveyed, by means of spouting, all the rain-water which falls from the buildings.

Our only objection to the otherwise splendid machinery of Messrs. Hornsby is the gay colouring, which, in implements intended for use rather than ornament, impairs the genuine effect. Above the stand is a gallery for lighter articles, containing excellent specimens of various field and barn machines. The drills are well worthy of attention, some recent improvements having been introduced, which have simplified them considerably; such as the application of gutta percha tubes, instead of the old jointed pipes, for conveying the manure and seed, &c. from the box to the ground; and an ingenious contrivance has been added, for preserving the level of the seed-box when the drill works on the hill-side. The winnowing-machine of this firm also deserves notice.

We must not pass over Messrs. Howard, of Bedford, and Smith, of Kettering; the latter of whom contributes an improved double blast winnowing-machine, and some newly-invented horse-shoes. These latter deserve the attention of all judges of horse-flesh, and the most humane manner of treating it.

At the end of this passage is Morsam's patent ventilating-grate. It has four different frontages, the faces of which are varied. It is heated and ventilated by the upper as well as the lower part of the chimney.

Following our plan, we now visit the mediæval court, which is situated on the north-east side of the Agricultural Courts.

**MEDIEVAL COURT.**—Although we have little sympathy with monkish times and superstitions, we have a sufficient freedom from prejudice to prefer the quaint Gothic decorations of the Middle Ages in ecclesiastical architecture, to the paganized temples formed by our "city churches." In this court the combined talents of Mr. W. Pugin (to whom the revival of a taste for genuine Gothic decoration is certainly due), with Messrs. Hardman, Myers, Crace, and Minton, have contributed, under the judicious direction of the first-named artist, to form a most magnificent *ensemble*. Before noticing in detail some of the most striking objects which literally dazzle the eye in this most interesting apartment, we must regret the want of sufficient space, to which many of the most beautiful objects are utterly sacrificed, the effect of their magnitude impaired, and the minute beauties of their decoration at times concealed.

Opposite the passage, branching from the central avenue, the stained glass is seen to advantage under the shadow of the gallery, and passing under a doorway of suitable form and proportion, we are at once struck with a feeling of admiration and pleasure, although impaired by the disadvantages of which we have spoken. The central object is a superb font of stone-work, executed by Mr. G. Myers, the panels on its sides decorated with bas-reliefs, and the whole surmounted with a rich oaken canopy. When the font is in use, the centre, which forms the cover, rises into the upper part. On the eastern side, is a grand group of cathedral furniture. A stone altar on steps, superbly carved with bas-reliefs, illustrating the last scenes in our Saviour's life, is surmounted by hangings of the richest and most highly decorated character. In their patterns, we recognize

the fleur-de-lis, roses, and sacred monogram. The sconces, candelabra, and chandeliers, are in wrought metal, and, whether we consider their individual beauty, or their excellence in promoting an effective *ensemble*, we must do full justice to the taste of Messrs. Hardman. The lecterns are nobly and simply magnificent; the smaller one, which has the sacred monogram for the tablet, and a small but elegant figure of St. John the Evangelist, for the surmounting figure, is remarkable for its novelty of design. We must not omit the admirable escutcheons in encaustic tile, by Minton, which adorn the tomb of Dr. Walsh. This latter monument will, however, scarcely bear comparison with those found in some of our country churches; in fact, it is thrown into the shade by the magnificence by which it is surrounded.

We must direct our readers' notice to the richly-decorated rood-cross, which occupies one corner, as well as to some rich sacerdotal vestments. In contemplating these latter, we cannot help feeling that they are more redolent of Papal magnificence than Christian simplicity. They are, however, interesting to those who would contemplate the full details of the ecclesiastical magnificence of the Middle Ages. We will once more remind the reader of Mr. G. T. French's splendid altar-cloths, and embroidered carpets for churches, which are unaccountably excluded from this compartment.

But the attractions of this room are not merely ecclesiastical. There are a fair number of instances of the successful application of the sumptuous adornments of the Middle Ages to the purposes of common life. In these Mr. Crace stands pre-eminent. The oak bookcases particularly deserve mention, and the massive fire-place, surmounted by coils of heraldic monsters and suits of arms, with adornments for the roof and wall to correspond, carpets and tapestries, as rich in comfortableness as in dazzling splendour, all unite in rendering the "Pugin Court" a centre of attraction for a crowd of admiring spectators.

We now enter the STATUARY ROOM, CLASS 30, in which, though there are some things to be ashamed of, there are far more that are worthy of praise. Though occupying, comparatively speaking, but a small space in the Temple of Industry and Art, its contents render it not one of the least important and interesting of the compartments of that extensive building. It is furnished with a pretty large number of groups, single figures, and alti and bassi rilievi, which are tastefully disposed, and produce on entering a very agreeable effect. Some of the works have been previously exhibited, and are known to many, either from inspection or description; but, though familiar to the eye of the frequenters of the metropolitan exhibitions, they will be new to the great majority of the visitors to the Crystal Palace. One of the first objects that deserve attention, in the corner to the right as you enter the room, is Bell's Dorothea, very pretty and simple, with great merit, though not of a very high class of art.

The Descent from the Cross, on the wall to the right, in plaster, of which it is remarked, "that, although it covers a very large space, the interest of the scene is confined to a very limited portion of the base. The upper part is occupied by the cross, and an indication of rays of light, which, perhaps the artist designed to turn to effective account on the execution of the work in bronze or marble, but which,

it must be obvious, only colour or gilding could realize. Mr. Carew has shown less anxiety to find subject-matter to fill his ground than Rubens, in his great work on the same subject, though the latter had all the resources of his florid pencil to fly to, and could have occupied the whole of the upper part of his canvass with aerial effects, had he been so minded. In the principal group of Mr. Carew's work, the head of Christ stands out with remarkable effect, the light falling upon it so as to give it all the palor of death. The heads of the Apostles are of less merit, and disappoint us by the utter want of sympathy and veneration which they betray for the precious burden in their hands. They are all looking off the picture, in a downward direction, as if calculating the steps by which they are to descend with safety. The female figures, also, which are a good deal scattered, appear to be each so overwhelmed with her own particular grief, that they none of them show any solicitude about the divine object which has brought them together, and no sympathy for one another. The boy on the right is an intruder. The consequence is a want of *ensemble*, to say nothing of a want of truthfulness to nature, which must considerably militate against the success of the piece. Mr. Carew has very abundantly draped his figures, but he has done it in that broad massive style, which is sometimes very effective in painting, but which is always heavy in sculpture, and suggests the suspicion that it has been resorted to to avoid the trouble of going into anatomical details." It is, however, a fine work of art, full of interest, with great solemnity and feeling depicted in the different figures.

A Tazza on a pedestal, modelled from a Greek design, by Wyon, is very beautiful.

Whittington, in plaster, by Carew, tells its tale at once, and may be characterized as rude and true. The honest simplicity of the boy's countenance is at the same time illumined by an intellectual liveliness of expression that we can well associate with the civic hero it represents.

St. John baptizing our Saviour has much merit, and is happy in some parts of its treatment; but there is an utter failure of judgment in making the chief figure over fat, and otherwise deficient in proper expression.

A Shivering Boy, by Foley, is very simple and pretty.

The two busts in marble, by Durham, from Milton's *L'Allegro* and *Il Penseroso*, are exceedingly good and most beautifully carved. We recommend them to the especial attention of visitors.

The Babes in the Wood, by John Bell, seem to catch the eye of every one who enters this room. The familiarity of the story, and its association with the earliest legends of our childhood, make every one understand and feel interested in the subject, which is treated by Mr. Bell most happily: the whole group is carefully and gracefully executed, and the extremities beautifully managed.

Flaxman, the great worker of marble, himself appears in marble, and in a remarkably simple and natural manner.

A group in marble, representing a Man holding a Dog, is severely classical in style. It is very truthful to nature; and though a little cold, is extremely fine: it is, in fact, a work of a high order.

Near this is a marble figure of a Reclining Female, which is a very pure work of art, with drapery exceedingly soft, and altogether beautiful.

The Startled Nymph, by Behnes, is very good, and increases in attraction as we view it.

There is at the back part of the room a group of Children, Pony, and Dog, in which the pony and dog are excellent, while the other figures are very poor.

On a stand in the middle of the room is a collection of statuettes, which are contending for the Art-Union prizes of £100 and of £50. Without the slightest hesitation, we give our vote in favour of "Solitude."

A cast by Lawler, represents a female sitting crouched down, with her feet drawn up in a strange position, but it is full of feeling, very truthful, is beautiful in a front view, and would be beautiful in any view if the upper part of the limbs were not quite so thin.

M'Dowell's Innocence, and Hogan's Drunken Faun, are, perhaps, the most perfect productions in their respective classes in the Exhibition. M'Dowell's name is so well known to fame that it is not necessary to dwell on his merits as a sculptor in this notice: not so his countryman, Hogan, who is comparatively unknown to the English public at least, although his position has been long firmly established in the foremost rank of living sculptors by the diploma of the Roman Academy of the Pantheon,—a distinction to which no artist whose pretensions are in the least questionable may aspire. The Drunken Faun possesses the rare merit of being an entirely original conception, neither stolen nor parodied from any work of antiquity or of the mediæval era, and there is an anecdote connected with the circumstances which led to its production not a little interesting, and which forms a curious passage in the history of art. At a *conversazione* in Rome of artists and *dilettanti*, the question happened to be started whether it were possible to produce anything in sculpture that would not be more or less borrowed from some existing model, and yet at the same time preserve the classic unities. The majority contended for the negative of the proposition. Hogan pleaded for the affirmative so earnestly, that an eminent sculptor present invited him to make good his words in his own person, and, to the surprise of all, he at once consented to stake his then growing reputation on the experiment. In an incredibly short time the Faun was revealed to the eyes of the public, and at once acknowledged by the most competent judges in Rome to fulfil the conditions of the startling challenge. Thorwaldsen, then residing in Rome, in an ecstasy of delight, pronounced it "a miracle of art."

The last group we shall notice in this room, though far from being the least beautiful, for it is, in fact, one of the finest things here, is a cast of Ino and the Infant Bacchus. This is a chaste and simple work of art,—the drawing perfect, and the treatment exquisite.

Leaving the Sculpture Court, we take the extreme south passage, and proceed eastward, to the MINERAL DEPARTMENT, CLASS 1; we notice the model of the furnaces, &c. employed on the Duke of Buccleuch's mines at Wanloch-head Hills, in Dumfriesshire, for separating pure silver from the rich lead ore found in that district. A mass of pure silver, as a specimen of the result of this process, weighing more than 140 lbs., is shown in a glass case. There are also specimens of lead, as brought from the mines after

smelting; crystals of leads, and other illustrations of metallurgy. We may also remark an excellent model of the arrangements employed in condensing the fumes from the furnaces, together with examples of the manufacture of sheet-lead and lead-pipe, forming, in fact, a complete history of the manufacture of lead. Mr. Beaumont also exhibits a large cake of silver, extracted from lead, weighing 12,162 ounces, and valued at £3,344; also specimens of lead ore in various stages of progress, from their being excavated in the mine and carried through the several departments of washing and smelting, until furnished and ready for the market, in the form of a cake of silver and a pig of lead. We must here notice the specimens from Newcastle to illustrate Mr. Pattinson's process for the separation of silver from lead, discovered in 1829. When lead containing silver is fused, and suffered to cool very slowly, with constant stirring, at a certain temperature, near the melting point of lead, small solid particles or crystals of lead are formed, which being heavier than the still fluid lead, sink to the bottom of the pot, and, on being removed, are found to contain much less silver than the original lead, the still fluid lead from which they are taken being rendered proportionally richer in silver. By repeating this crystallizing process several times, the crystals become poorer and poorer, until they contain but a mere trace of silver, while the liquid lead, on the other hand, becomes exceedingly rich, so that a large plate of silver is obtained by submitting but a small quantity of this rich lead to cupellation. The specimens consist of original lead, containing about 10 oz. of silver per ton; crystallized lead containing 5 oz. of silver; crystallized lead, from the first process, containing  $2\frac{1}{2}$  oz. of silver; crystallized lead, from the second process, containing  $1\frac{1}{4}$  oz. of silver; crystallized lead, from the third process, containing about half an ounce of silver per ton, sent to market as separated lead, being much improved in quality by these operations. There are also specimens of slabs of lead, to show the form of the crystal of rich lead, containing about 20 oz. 40 oz. 80 oz. 100 oz. 200 oz. and 300 oz. of silver per ton respectively, and of silver, obtained by submitting this latter rich lead to cupellation. A block, on the floor, of native and grey copper ore, from the Phoenix Mines, near Liskeard, is well worthy of inspection.

On the walls are several specimens of paper-hangings, we presume placed chiefly for ornament, as also some specimens of Steven's Martin's cement.

Among the ingenious applications of zinc, we may particularly notice a model of a British-built frigate of 50 guns, sheeted with zinc from the Vieille Montagne Company. It is remarkable as being also coloured with zinc paint, which is considered much more durable than the pigments ordinarily employed.

Among the many varieties of gas-meters, the large dry meter, by Glover, is the one by which all the gas consumed in the Exhibition is calculated.

On the walls are some beautiful imitations of different kinds of woods and marble, admirably executed by Moxon.

We now come to some models of the machinery and apparatus used for dressing the inferior copper ore called halvens, at the Tywarnhaile mines, the property of H.R.H. the Prince of Wales. There are also exhibited specimens of the mineral in its several proportions, and of the clean ore. The ores are reduced to a fine state

by crushers, and are then passed through various channels and troughs, so that, in obedience to the law of gravitation, the heavier and more valuable parts are separated. We must especially point out the "round buddle," by which the final separation of the metaliferous portion of the ore is separated. Close to this some more models and maps of the mineral fields and workings of the Ebbw Vale Company, near Abergavenny, with various specimens of the coal and ironstone; one of the models shows the mode of using the gases and economizing fuel in their blast-furnaces. Iron in the various stages and forms, the pig, the sheet, the bar; and under its various conditions of brittleness or toughness, which is the result of the process of manufacture, is displayed. The immense application of iron to architectural purposes, in the present day, renders these objects doubly interesting.

We pass on to a new method of decoration for the side of a room, with some coloured decorations for ceilings, and other specimens, exhibited on the wall; also a variety of articles carved in ivory, and a skull of an elephant.

Mr. Stirling, of Lambeth, contributes a slate cabinet, the covering of which is formed by the bottom of a slate cistern, formed of slabs of slate, secured together by a new method, invented by Mr. Stirling, filled with various articles exhibiting the numberless applications of slate, patent filters, ornamental loo-table top, chess and ladies' worktables; also specimens of roofs covered with slates from the Bangor quarries.

Freeman, of Milbank-street, sends a caddy made out of 1,000 different pieces of marble, left from the works at Buckingham-palace, and a beautiful highly polished block of green and black marble, from the estate of Mr. Martin, of Galway.

We now notice a statue of Sir William Wallace, and close to it a group representing Orphans reading the Bible, executed by Ritchie, of Edinburgh: they are well deserving of praise as works of art.

White and Sons send cement for skirtings, and also for walls, with specimens of both, exhibiting considerable taste. We also notice some China clay, raised in the China stone-quarries, St. Stephen's, Launceston. This clay is mostly produced in Cornwall, between Bodmin and St. Austle: it is very much used in the potteries, for the manufacture of the finer descriptions of china.

A collection of minerals from the Bristol district, together with a geological plan, by Thomas Howard, deserve attention; the country round about Bristol being noted for the great variety of mineral productions that it yields. There is also a very extensive series of rocks, all of which are rich in metallic ores.

Some glass pipes, by Mayo, on the walls, are remarkable for their immense size.

A collection of the minerals and geological specimens, arranged by Tennants, is an instructive study for those interested in the structure and contents of the earth, although too extensive to allow of our pointing to specific objects.

Having now reached the end of the building, we turn to the right, and crossing over to the north side of the nave, we set out from the Kensington end of the building on the Serpentine side of the nave; taking the compartments on our left side in order, we first meet with a complete and well-arranged display of—

COTTON, CLASS 11.—Sail-canvas, and other works in cotton. Among these latter, in the second room, we may particularly notice the beautiful plaid handkerchiefs, sent by Mr. Anderson, of Glasgow. The brightness of the colours and the fineness of the fabric almost rival similar productions in silk. A case of dresses, by Henry and Sons, of the same town, and various articles in cotton, by Messrs. Lowtham and Parker, and Dickson and Sons, Carlisle, almost astonish the surveyor, when we reflect upon the coarse simplicity of our earlier productions in cotton. Equally interesting, as showing the advance in this manufacture, is the collection of cotton thread, of every conceivable degree of fineness, sent by Messrs. Evans and Clarke, from Leicester.

A curious specimen of a seamless garment, from Messrs. Cross and Co., Manchester, reminds one of similar feats of skill attempted by Oriental handicraft.

A chess-table, elegantly carved, and, to all appearance, formed of dark oak, but in reality composed of countless layers of calico, carved and japanned, may, for eccentric ingenuity, claim comparison with any object in the Exhibition. This, together with some glazed hats formed of the same material, and even lighter than the gibuses, are contributed by Messrs. Lincoln and Bennet, of Sackville-street. In the next compartment we find some exquisite muslins, the figures produced in the loom, contributed by Messrs. Mair and Son, of Glasgow. One piece of muslin, in particular, spun by T. Houldsworth, of Manchester, is believed to be the finest ever manufactured. A blind and curtains, in harness woven muslin, by Crocker, also deserve notice.

LEATHER, CLASS 16.—Passing the staircase recess, which is hung with rich mats, rugs, and other articles, chiefly in wool, we are next struck with the “monster portmanteau” of Messrs. Wilson and Walker. This splendid piece of leather-work is of the size of a tolerably extensive seaman’s chest, and contains a variety of compartments and internal arrangements, sufficient to justify the popular notions relative to a portmanteau “holding anything.” In this same room we may observe the fine specimens of the skin of the walrus, the thickness of which makes the rhinoceros hide, now formed into walking-sticks, seem almost insignificant. Among the fancy-leather works in the three succeeding rooms, Messrs. Hood and Son, of Boltonsborough, contribute some exquisite rugs, formed of the skins of the sheep and Angola goat. An amusing device has been employed by Messrs. Clark, whose counter represents the frontage of their factory. A variety of sumptuous horse-trappings and whips are sent by Ashford, of Birmingham. Our readers will be diverted by a cabinet of moderate dimensions, but which, for powers of comprehension, outrivals even the “monster portmanteau.” A compact suite of barrack drawing-room furniture is stowed away in little more space than that of an ordinary chest of drawers. To travellers, so compact a piece, or rather, suite of furniture, must be invaluable.

Going onwards, we meet with a spirited model of a horse, completely equipped, the harness of which, by Blackwell, is deserving of all praise; and a most unique case of whips, the *penates* of a sporting man, which, in exquisite variety and appropriateness of design, exhibit almost every animal connected with the chase on the handles,

each in some interesting "field" situation. This is due to the sportsmanlike taste of Messrs. Swain and Adeny. Mr. Cuff, of Cockspurstreet, also contributes a magnificent gold-embroidered saddle.

A new lady's saddle, exhibited by Mr. T. Oakley, of Maidstone. The seat front of the near head, of the leaping-head, and the safe of which are inlaid with very beautifully-embroidered flower-work on white cloth, which gives the saddle a very tasteful and elegant appearance. It is not unlikely that this hint may be extensively followed, and that young ladies may furnish embroidery for their own saddles. Mr. Oakley has introduced an improvement in construction, by dispensing with the off-head or horn, the original object of which is effected by the leaping-head; and the alteration gives the saddle a very light and improved appearance.

Just outside, we meet with a marvellous display of shoes and slippers of all ages, sizes, and styles. Herein we must make honourable mention of that most philosophical of foot-clothers, Mr. Sparkes Hall, who has gone into the very *sole* of his subject with a literary minuteness, only equalled by the beauty of the specimens actually exhibited.

FURS, CLASS 16.—Furs and wigs, among which we will only notice a young lady in wax, of unusual and most un-hairdresser-like beauty, with a head of real hair, outrivalling all that has been written, even in Oriental tales.

A word, *en passant*, for the ingenious application of Minton's encaustic tiles to the formation of garden ornaments. This elegant style of pottery, so often met with in our old cathedrals, and bringing the Mosaics of Pompeii to our recollection, deserves more extensive application than it has hitherto obtained.

MINERAL MANUFACTURES, CLASS 27.—Passing by a most beautiful medallion, in tile-work, of Prince Albert, supported by Triton, the exquisite works in serpentine next claim our notice. The elaborate manner in which tables, chimney-pieces, slabs, &c., are inlaid with various marbles, and, in some instances, the almost infinite variety and minuteness of the pieces, defy description. In the present age, we may look forward to finding marble employed with as liberal a prodigality as in the days of imperial Rome, and with a taste and facility vainly sought in more ancient works. The similar application of Cornish granite, porphyry, sleetites, and other mineral substances, to the formation of tables, candelabra, pedestals, &c., is remarkably exemplified in the specimens furnished by Mr. Pearce, of Truro.

Marble tables are certainly less rare than formerly; but such tables as this compartment exhibits are sufficient to make the mouths of the *cognoscenti* water.

A particularly beautiful contribution to the Exhibition comes from Derby, in the form of a stove and chimney-piece. A bright steel drawing-room stove, with or-molu ornaments, has a porcelain hearth in five compartments, divided by burnished steel beads radiating from a centre. In the middle compartment is a view of Dovedale, and right and left are different views of Matlock and other Derbyshire scenery. The china slabs were made at Derby China-works, and the paintings were executed by Mr. Aplett, who has had several commissions from her Majesty. This is the first instance of



the introduction of this material and style of ornament for the hearths of drawing-room stoves. The chimney-piece is of marble, with fluted columns in front, and beautifully inlaid with mosaic-work. The whole is the produce of the Derbyshire mines and quarries.

To Messrs. Orsi and Armani we are indebted for some magnificent tables, &c., in metallic lava. Equally beautiful are those specimens of modern Venetian stucco, the hardness and firm grain of which almost rivals stone. On the right-hand side are a collection of imitations of woods and marbles, which almost put at stake the credibility of the contributor. So difficult it is to believe them imitations only! A beautiful chess-table, the chequers being alternately composed of coal and gypsum, superbly polished, cannot fail to attract notice. A magnificent chimney-piece, in Caen stone, though, in our opinion, a little out of place, does full justice to the hand of the designer and manufacturer, Mr. Frewer, of Ipswich.

FURNITURE, CLASS 26.—Messrs. Burroughes and Watts, of Soho-square, furnish a most splendid billiard-table and marking-board, in English oak, in the Elizabethan style. But the chief attraction of this room is the complete side of a room, by Messrs. Crace, of Wigmore-street, and a compartment of a similar room, decorated in *carton-pierre*, by Messrs. Jackson and Sons, of Rathbone-place, whose great reputation as the manufacturers of *carton-pierre* ornaments and decorations is well sustained in the elaborate works here displayed. The carved ceiling, which constitutes the roof of this compartment, is an admirable specimen of skill in execution, as of talent in design. The figures, animals, and flowers, introduced as adjuncts to the ornaments, so combine with them as to produce a oneness of effect throughout; and the exquisite character of these ornaments is enhanced—and not, as too frequently, destroyed—by the introduction of these figures. The specimens of ceiling-flowers, cornices, string-courses, and mouldings are all excellent; and the examples of caryatides—a detail in ornament generally marred in the execution—are vigorous adaptations of the human figure to that not over rational, but so frequently used, ornament.

An ornamented table in gutta percha is elegant; but we are inundated with gutta percha in every conceivable form. A word must be said in praise of the admirable subserviency of individual *bijouterie* to general effect. Each compartment, though replete with articles so varied in material and dimension, is remarkably free from confusion, and an even artistic view to efficient contrast of form and colour has been obtained.

The reader of the "Antiquary" will find a feast for the eye in a magnificent piece of furniture yecept "Aldobrand's Cabinet," made by Mr. King, carver and gilder, of Whitehaven. It is entirely composed of British oak, in three varieties, pale, brown, and black. The black, which is as rich and fine a specimen of ancient growth as could be desired, was found by the Rev. Henry Lowther, embedded 10 feet below the present surface of the soil. The design of the cabinet was suggested by the description of that belonging to Oldbuck, in Scott's novel of "The Antiquary," and the details are intended to commemorate the early progress of the art of printing and the Reformation. The lower part, which is 5 feet 6 inches by 2 feet 6 inches, contains, in the front, two deep recesses, with two

drawers above, containing secret drawers, by way of keeping up the character of the old cabinet. The two drawers are fronted by rich carving in light oak, surrounded by a very elaborately-carved moulding in black ditto. Externally, the front recesses present two beautiful Saxon arches of black oak with twisted columns, divided by a brown oak bracket, all richly carved. One corner is supported by a figure of Guttenberg, the inventor of the art of printing, and the other by one of Caxton, the first English printer. In the sides of this part are panels opening into recesses with shelves. The base is ornamented with rich mouldings, and is supported upon tortoises. The upper part of the cabinet is 5 feet 4 inches by 2 feet, and contains a centre or front compartment, and two side ones. The centre one is 4 feet by 2 feet 6 inches, and is fitted up inside with shelves. The outside decoration is a superb Saxon arch, ornamented with the old English or black letter alphabet, and enclosing, like a frame, a pictured panel representing Aldobrand, the journeyman printer, presenting to "Jung-frau Bertha" his first proof from her father's press, the ability to work which won her for his bride, and uttering the appropriate words, which he afterwards adopted for his motto, "*Kunst macht Gunst*,"—*Anglicè*, "skill wins favour."

A beautiful wood screen, carved in oak, for a church in Surrey, is the design of J. Clarke, of Stratford-place, executed by H. Ringham, of Ipswich. Near it is a most curious table for flowers, with a slate top, carved in maple, and with a worked oak wood border. A dial on the top of the table serves to indicate the time. One of the most curious Mosaic tables we ever saw is contributed by E. Nye, near Tunbridge Wells, and represents a ship at sea. The whole of the indentations of the ropes, the shades on the sails, the port-holes, &c., and even the rippling of the waves, is imitated in numberless small squares of varied woods. The ceiling of this compartment is beautifully decorated with an allegorical group, introducing the Queen, surrounded by various figures, &c., symbolical of the great undertaking of 1851.

A round table of walnut, the centre portion of which revolves, so that the decanters, placed in their stands, are carried round, and the trouble of "passing the wine" saved. This ingenious production is from Mr. J. Calder, of Bath. The cabinet of Stanton oak, with glass and or-molu decorations, derives much interest from its being made and carved by three deaf and dumb persons. This piece of workmanship is contributed by W. Herbert, of Market-street, Oxford. Mr. Belleaby, of York, furnishes a cabinet of oak, richly ornamented with panels of burnt white wood. The dull iron-grey of the pattern forms a most pleasing contrast with the rich brown of the oak. We must also commend the very handsome console chiffonnier, made of fine English walnut-wood, with a top of statuary marble, let into a moulding of ebony and tortoiseshell.

There is likewise a very exquisite *marqueterie* table of inlaid woods, the subject taken for representation being the Battle of the Nile. The centre portion of the table is a close copy of the well-known picture, in which a Greenwich pensioner is attempting to describe, by the arrangement of the fragments of his broken pipe upon a table, the disposition of the naval armaments in the celebrated engagement; and the effect of the original painting is preserved with a fidelity which, considering the material to be dealt with, is really surprising. Around the centre-piece are ranged the flags of the various British

ships engaged, and some of the vessels are displayed in action. Encircling this again is a border of flowers, executed with the greatest freedom and delicacy, and surmounting the whole is a figure of Fame crowning the hero Nelson. The table measures 5 feet in diameter, the body of it is composed of walnut-wood, and the inlaid pieces comprise almost every known variety of wood, comparatively few of them being dyed. The greatest pains, too, have been bestowed, not only upon the upper surface, but also on the pedestal, which is ornamented with groups of flowers of the chastest design and most beautiful execution.

Some of the furniture contributed by Mr. W. Newton, of Glasgow, deserves notice as a real arithmetical curiosity. We may specify the table, composed of nearly seven thousand pieces of foreign woods; and the chiffonnier, containing above four thousand.

On our left, as we leave this compartment, is a model of a British State Bed, exhibited by H. Scrimgeour, of Edinburgh, with a canopy in the Elizabethan style, carved in pine and plane-tree, deserving of especial attention: the blankets are of the finest Cheviot wool, and sheets of Tweed linen. It is protected by a glass case, and has a very rich and gorgeous appearance.

Mr. Grundy, of Manchester, exhibits some exquisitely beautiful frames for prints and drawings. Although neither drawings nor engravings are admitted to the Exhibition, Mr. Grundy has obtained special permission to fill his frames with a few drawings, without which the style of frame could not be duly illustrative, especially as it is made to take its character from the pictorial subject which it surrounds. For instance, one light frame incloses a sheet of seven small studies of the late Sir Augustus Callcott, which are, as it were, inlaid or sunk into the *matte* or mounting, so as to preserve them from injury, as the glass cannot touch them. This frame has at the lower corners a perforated ornamental inner border, extending over the glass itself, consisting of the entwined foliage of the oak and ivy, as emblematical of the honour due to the deceased artist. At the top corners, the ornamentation does not fall inwards over the glass, but outwards, and consists of the stems, leaves, and flowers of the convolvulus and the anemone. A somewhat plainer and heavier style, but still very light when compared with contemporaneous frames elsewhere, has been designed for such drawings as those of Cattermole, Nash, &c., or for prints from the old masters. Landseer's well-known circular print of the "Queen Nursing," which is spoiled by a square frame, is here in one neither square nor octagon, but approaching the latter, or what the former would be if the corners were rounded off in a large radius. Another frame is adapted to Sir C. E. Eastlake's picture of "Christ Weeping over Jerusalem," which is elliptic in form, having an arched top. The centre of the top and base of the frame have appropriate emblems: the dove at the top; at the base, the cross, the seven seals, &c. Then a pair of frames for Sir E. Landseer's "Peace" and "War," are alike in general form and style, but different in embellishment, both being emblematic. "War" has at the top martial trophies, spears, flags, swords, cannon, &c., surrounded by an oaken wreath. At the sides are other trophies,—shields, helmets, breast-plates, and other defensive armour. The corners are filled with oak and ivy, and the centre base with the wreath-like palm-branches. "Peace" has at the

centre-top the cornucopiæ filled with fruit, wheat-ears, &c. ; and the banners of war are furled. At the sides are grouped agricultural instruments, and the armour wreathed with flowers. At the corners, the convolvulus and other flowers; and at the base, palm-branches. Then the circular engraving of Raffaele's "Madonna del Seggiolo, or Sedia," has a light, chaste frame, surmounted with the stem, leaves, and flowers of the lily—emblem of purity,—and other appropriate decorations at the base; and as both these project over the line of frame, the effect is to elongate the circle, and to take away the monotonous effect of a ring-like frame.

The articles in the next compartment would almost be in better keeping in the Pugin court. The magnificent altar-cloth of crimson velvet, exquisitely embroidered in gold, and the bishop's chair, taken from an ancient one in York Minster, do credit to the ability and taste of Messrs. French, of Bolton.

The Taunton Cabinet, exquisitely carved in walnut-tree wood, is the most conspicuous article in this department, and well deserves a lengthened description. It represents, in four beautifully-carved male figures, executed after the style of Gibbons, the periods of Youth, Manhood, Maturity, and Old Age, whilst four other (female) figures, beautifully brought up in good relief, are representative of the Passions. The figure of the Youth represents him at twenty years of age. The countenance marks the innocency and candour of the young heart; the open brow, the love-lighted eye, all exemplifying characteristics of that period of life, untrammelled with care or anxious thought. In his hair, admirably brought out from the solid wood, are entwined the violet, the primrose, and the cowslip, emblematical of the season—being the spring-time of life. The left hand is extended, pointing to Manhood. This figure denotes the period when forty summers have ripened the man, and brought the noblest work of God to that stage of his keener judgment, stronger frame, and more lasting energy. These characteristics are most admirably depicted. In his locks are carved the rose, the lily, the pink, and the carnation, the strawberry and the gooseberry—emblematical of the summer-time of life. In his right hand he receives the festoon of flowers from Youth, and in the left he supports the frame of the cabinet. The festoon is carried on to Maturity, which represents the time when sixty years bring him to the period of decline. Its right hand assists with the left of that of Manhood in supporting the cabinet. Encircling his brow are corn-ears and wine-cups, together with barley, wheat, grapes, and hops, the whole of which are most elaborately and finely chiselled. The hand of Maturity points downwards to Old Age. The furrowed brow, the sunken cheek, the dim and glassy eye, observable in this figure, convey the mournful intelligence that the sand of life is fast approaching its last little grain. The holly, the mistletoe, the ivy, the acorn-shell, the leafless branch, and the fruitless vine, encircle the brow—fit emblems of the period which marks an exchange of time for eternity. All the figures are rendered complete by a carved lion's foot at the bottom of each, and above the feet is a connecting frame to make that portion of the stand perfect. Between the figures of Spring and Summer are carved flowers and fruit in great profusion, emblematical of the seasons, and forming a fine piece of work; it represents the all-important fact that time flies, by an hour-glass borne on the wings

of a splendidly-carved eagle, and suspending from the bird's beak is the motto, curiously wrought, "*Tempus fugit.*" This rests on a globe, representative of the earth, which is half sunk in a shell of water, overflowing the wheel of time, and shedding on fruit and flowers its refreshing dew. The space between the figures of Autumn and Winter is filled with carvings of the chrysanthemum, holly, ivy, and autumn fruit, entwined with consummate skill and taste. Above the figures, and resting on their heads, is a richly-carved stand or frame to receive the top part containing the drawers, doors, &c., and is constructed in a peculiar manner on the bevel, that the eye may easily rest on some beautiful and appropriate mottoes from "Thomson's Seasons." The whole work is exquisitely adorned by enrichments in needlework, worked on black velvet, by Miss Kingsbury, who had already received a medal from Prince Albert for similar specimens.

From Mr. Lane, of Birmingham, we have some superb articles in royal patent pearl glass and *papier-mâché*. Messrs. M'Callum and Hodson, of the same town, have sent a royal cabinet, adorned with portraits of Prince Albert and the Queen on the doors, and a view of Osborne House on the top.

Besides the shield of Wellington, we must notice, in this department, some beautiful works inlaid in mother-of-pearl, without the addition of artificial colouring, from Messrs. Halbeard and Wellings. To our mind, the natural beauty of the pearl conveys more idea of true art than the somewhat tawdry colours with which it is so often invested in *papier-mâché* works. For the information of those who are anxious to have some notion of the process of this latter elegant manufacture, a complete set of specimens, from the raw material to the complete work, are judiciously contributed by the same firm.

A bed, sumptuously furnished in chintz, by Cawley, of Brompton, deserves notice for the ingenuity by which the rod of the curtains is made to serve as a portion of the cornice. A model of Dundee claims notice, but is eclipsed by many others in the Exhibition. Outside, we find a collection of models of colleges, works in *papier-mâché*, &c., contributed by Messrs. Spiers, of Oxford. We are rather surprised at so common-place a display finding a place in the Exhibition. It seems to be recommended neither by originality nor costliness.

PAPER, CLASS 17.—The next room is interesting from the collection of printing and stereotype specimens, but more particularly from two objects, bearing little relation to each other, but both highly amusing in their way. An exquisitely Pickering-like, antique-printed quarto edition of "Mister Pips hys Diary," long since familiar to the readers of *Punch*, and rejoicing in superb line-engraving fac-similes of Doyle's (alas! now lost to *Punch*!) amusing violations of perspective. The binding is amusingly serious and respectable; in fact, we cannot help thinking it must be something quiet-going and uncommon, but open the book, and *nous avons changé tout cela*.

The other object, of almost pathetic interest to those who appreciate the mighty undertaking which has thus brought the dissonant elements of humanity into one bond of intimate enlightenment, is the rude, crooked-lined sketch on blotting-paper, exhibiting the first idea of Paxton's design. As the description appended thereto tells its most interesting tale, we will merely observe that this little bit of

scribbled painting, viewed in connection with the wondrous fabric reared above our heads, has almost as high a claim on our admiration as the more artistic Italian chalk sketches of a Michael Angelo in the Taylor Buildings at Oxford.

De la Rue's most ingenious machine for the manufacture of envelopes, is a great attraction. At that distance from the source of steam power, in the north portion of the building, it is most convenient to work the machine by hand, the operator, however, being concealed from view. A boy feeds the instrument with the papers to be folded, which are previously cut and stamped, and placed in a heap by his side. A piece of paper having been placed on a metal cell, the size of the envelope, a plunger instantly advances and thrusts it in, by which means the shape is given.

We may remark, that, in the machinery department there is another similar machine, in many respects the same, though apparently more self-acting, for it feeds itself, and stamps an impression on the paper as well as gums the edges. The feeding part of the operation is very curious. The end of the arm that lifts each piece of paper into its place on the top of the metal cell is hollowed, and is connected by a tube with a small instrument like a pair of bellows, which produces a partial vacuum, and causes the paper to adhere to the end of the arm by the pressure of the atmosphere. The reversal of the action deposits the paper in the position to receive the blow from the plunger, which brings down at the same time the die to stamp the impression. When the plunger is removed, the bottom of the cell falls down and delivers the envelope into an inclined trough, whence it falls into a box. The envelopes then require to be gathered by a boy, and pressed. This machine does not appear to act so rapidly as the other, though it is worked by steam power. The number made per minute is stated to be about forty.

We must refer our commercial readers to a collection of prize ledgers, by Cowan; and a collection of rags, yclept "paper materials," present a diverting contrast to the virgin sheets of the "manufactured." It is to Messrs. Venables and Co. that we are indebted for this entertaining comparison.

Messrs. Ackerman, of the Strand, and Regent-street, contribute a monster colour-box, exquisitely decorated in *papier mâché*, and internally furnished with most complete arrangements for the practice of the art. It is said, that this elegant article is to form an appropriate present to his Royal Highness Prince Albert. While we survey this, we must not forget some charming arrangements of seaweed of various colours, by Miss Taggart.

Superb specimens of bookbinding, by Messrs. Wiseman, Cambridge, and Leighton, and more particularly, a Bible bound for King William the Fourth, with a representation of the "Sailor Prince" on the side, are highly interesting, as well as a "monster ledger," in a glass case. We must not forget, outside, a sheet of paper 2,500 yards in length.

FINE ARTS, CLASS 30.—The effect of Miller's silica colours is beautifully illustrated by a couple of paintings, one of the "Angel appearing to Joseph in a Dream;" the other, by Corbould, of "Britons deploring the Departure of the Romans."

Immediately opposite, are Mr. Owen Jones's beautiful book illus-

trations, consisting of exquisitely-painted flowers and fruit. Next we meet with Mr. Leake's stamped leather, in a hundred varieties.

We next find a frame containing Messrs. Hanhart's productions, and these make us linger long. The copy of Mr. Creswick's "Forest Farm" is excellent, especially the sky, the far-distance, and the trees; the farm-house is not quite so successful. But Mr. Frederick Tayler's "English Squire," lithographed in colours by John Brandard, is Messrs. Hanhart's pride; and well it may be. We do not hesitate to claim for it the highest praise; and we doubt if there is a work of imitative art in the whole Exhibition showing more artistic skill, and more untiring patience, than is evinced (to those, at least, who know the necessary process) in this remarkable work. The subject is very pretty: an old English squire and his daughter, with their attendants, all on horseback, accompanied by a falconer bearing the hooded hawks, are passing by some peasant children at a gate. The riders and their dresses, the horses and dogs, and especially the little children, are all excellently drawn, and full of beautiful colour. We are sure that nineteen out of every twenty visitors would believe they were looking at an original water-colour drawing, were it not for the announcement beneath it, and the unfinished copies, showing some of its various stages, that are displayed in the same frame.

Amongst the various specimens of printing in tints, Mr. Roberts's celebrated work on the "Holy Land" is deserving of praise in this department.

Of the innumerable models exhibited, one of the most interesting is that of Wavertree, which is less than 18 inches square, yet it gives, in exact proportions, the church, Wavertree-hall, and about three hundred figures, farm-houses, out-offices, omnibuses, coaches, carts, &c. The figures, minute as they are, are all likenesses. The gardens are all in bloom; the ladies coquette down the walks with their parasols; coaches pass with elegantly-dressed females in them; the fish-women bear stock upon their heads; the omnibus-drivers seem to crack their whips at the yelping dogs below; and, in order that there may be no mistake, every omnibus and cart bears its appropriate title, &c. One man is seen currying a restive horse; another ascends a ladder, paint-pot in hand; while a footman holds a tray for the reception of a visitor's card.

Opposite a mass of specimens of brushes, colours, and other paraphernalia of painting, are some pretty models. One, in particular, representing the model of an English residence in the 19th century, with a rather attractive young lady standing at the door, is perfection itself. The internal arrangements of the rooms embrace the minutest details, even to the whips hanging up in the little outer room at the back of the staircase. The rooms are exquisitely furnished with Lilliputian furniture. An imitation-Turkey carpet in the dining-room, a velvet-pile ditto in the drawing-room, with gilt chairs and tables, and all the graceful details of a well-fitted house of the middle class of society, make this the most intellectual baby-house we ever beheld. Of equal, though more staid merit, is the model of Johnstown Castle, Wexford, Ireland.

Along the same wall with the silica specimens, among the numberless objects which surprise and delight us, a tournament, containing several hundred figures, cut out of paper with ordinary scissors, rivals, for spirit and neatness, the many ingenious attempts we have

witnessed in similar material. Such works of patience, combined with a certain power of artistically overcoming the flatness of the material, make us believe in the idiosyncracies of human ingenuity. They can certainly be tried only by their own claims to our commendations.

Not far off, what appears to be an ivory model of the west front of Exeter Cathedral, astonishes us by turning out to be mere pith of rush. In fact, after seeing tables made of calico, and other similar freaks of manufacturing skill, we are almost driven to believe that anything may be made out of anything, and to condemn the old proverb about the "silk purse," as obsolete.

Our readers are doubtless familiar with the useful invention, lately become so general, by which the surfaces of maps are raised and indented, thereby giving an excellent idea of the geological character of a country, and the relative heights and depressions of the different parts of the surface. As an excellent and large specimen of this style of mapping, the model of the intrenched camp of Ling, in Upper Austria, cannot fail to please.

Captain Morgan has contributed a beautiful model of Tintern Abbey.

The Kenilworth buffet, adorned with sculptured relievos, illustrating the most interesting events at Kenilworth Castle, and made from a celebrated oak-tree grown upon its domain, is the production of Messrs. Cookes and Sons, Warwick. Whether we consider the many external associations which unite themselves with the remembrance of this romantic old estate, or the excellent workmanship bestowed upon the work of art before us, we feel assured that few objects will be more interesting, especially to the readers of Scott. The design of the centre panel, carved out of one solid block of oak, represents Queen Elizabeth entering Kenilworth Castle in all the pomp usually displayed on those occasions. The cavalcade is seen crossing the tilt-yard, and approaching the base court of the building by Mortimer's Tower. Leicester is bareheaded and on foot, leading the horse upon which his august mistress is seated, magnificently arrayed. The Queen (then in her 42nd year) wears her crown, and has around the neck the enormous ruff in which she is always represented. Two pages follow the Sovereign. The Earl of Leicester is dressed in a courtier's garb, showing his fine and commanding figure to advantage. In the distance, soldiers and a mixed multitude are making the welkin ring with their clamorous joy. A portion of the castle is seen in the back-ground. At one end the gateway, through which the cavalcade is about to pass, is Mortimer's Tower, the remains of which are still in existence, and considerably heighten the romantic beauty of the Kenilworth ruins. At the opposite end of the panel the Earl of Essex, Leicester's rival in the favour of Queen Elizabeth, is conspicuously observed, mounted on a noble charger. Nothing can exceed the beauty of the splendid group presented to view in this panel. The figures are full of grace and animation. The horses, also, will bear the closest scrutiny, and are *chefs-d'œuvre* of wood sculpture, every detail being remarkably precise and effective, while all the prominent features of the whole scene are skilfully developed, without the least confusion, or absence of that simplicity which is the principal charm in all great works of art. On the table part, underneath the centre panel, is displayed the Tudor rose, emblematic of the period, and surmounted by the royal crown, with



the famous motto of Elizabeth, "*Semper eadem*," on a riband. On the spandrels (appropriately supported by water-flowers and rock-work pendentives) are marine subjects taken from the "pageant,"—namely, a Triton on the mermaid, and Arion on the dolphin, so playfully connected with Mike Lambourne's mishap, in the novel of *Kenilworth*. The panel on the right, or dexter side of the buffet, recalls the scene in the same work, when Queen Elizabeth meets Amy Robsart in the grotto, in the grounds of the castle; and the half avowal of her connection with Leicester is forced from poor Amy by the indignant Sovereign. The artist has admirably represented the life-like and beautiful figures so ably contrasted,—the timorous, sylph-like Amy, and the stern majestic Queen. The subject of the left panel of the buffet represents the interview of Queen Elizabeth and Leicester, after the exposure of the deceit practised upon her by the latter, and his marriage with Amy Robsart. Leicester is shown in a kneeling position, with one hand on his breast, and the other extended towards Elizabeth, as if appealing to her sensibility. Having noticed the carved panels of the buffet, the observer will remark the four richly-finished statuettes at the corners, emblematic of the golden reign of Elizabeth. These personages have been selected as more prominently adorning the times of the maiden monarch, with their peculiar attributes of excellence. At the extreme corner of the right, or dexter pedestal, is represented Sir Philip Sydney, the nephew of the Earl of Leicester, whose character combined all the qualities of a great poet, warrior, and statesman. He died in 1586. He is displayed in armour, typical of the military achievements of Elizabeth's reign, leaning on the sword, and bareheaded. His noble and expressive features are skilfully developed, and accurately resemble the curious and original portrait of the young hero in Warwick Castle. On the opposite side of the same pedestal will be recognized Sir Walter Raleigh, who attained eminence in almost every branch of science and literature. He is arrayed in a courtier's dress, and the elaborately-carved figure represents him in a thoughtful attitude, with a scroll and pen in his hand. Raleigh was beheaded on a contemptible charge of high treason in 1618. On the left pedestal, at the inner side of the buffet, is a figure of Shakspeare, who is shown in a reflective mood, his whole attitude combining graceful ease and dignity with that noble intellectual cast of features so indicative of genius. This great dramatist, the "world's wonder," died in 1616. The last figure is that of Sir Francis Drake, the first Englishman who circumnavigated the globe. An anchor is appropriately introduced, emblematic of his naval career; and the costume chosen is a court dress. Drake died in 1595. The ragged staff mouldings of the Kenilworth buffet are imitations of the best examples in the Beauchamp Chapel, Warwick, where the Earl of Leicester is interred. The supporters of the projecting shelves also represent the proud crest of this splendid noble, the bear and ragged staff, borne by the Earls of Warwick from the most remote times. The decorations on each side are beautiful specimens of Elizabethan ornaments.

Everybody has heard of "Mechi's model farm," and few gentlemen need be reminded that it is to its enterprising possessor that we owe so much "comfort in shaving." Here, however, is the very farm,—hay, straw, pigs, cows, and all,—before our eyes. By a con-

trivance similar to that adopted by the *Devil on Two Sticks*, the roofs of the sheds lift off, and disclose the minute neatness of the internal arrangements. We recommend it to our readers' especial notice, not only for its beauty as a most life-like collection of what would with other arrangement resemble a mere toy, but also to those who feel interested in the subject of sanitary arrangements, and in the improvement of dwellings for animals. The model of the kitchen must make M. Soyer jealous. By the way, the green stripes in front of Gore House are a most unaccountable introduction. We cannot praise the taste of the decorator.

A "Descent from the Cross" is finely printed in colours by Kronheim, of Paternoster-row.

The collection of Mexican wax-figures, contributed by Montanari, and illustrating the costumes, manner of dancing, attitudes of war-like defence, in every variety of position, are perfection itself. Few things in the whole place attract greater notice.

The "Shakspeare Jubileum," modelled by Aldred, a working printer, represents the residence of the poet at Stratford-on-Avon, surrounded by groups of figures illustrating a scene from every play. It is unnecessary to say how attractive this unique effort of genuine industry proves, and how creditable it is to the enthusiasm of one possessing such comparatively limited opportunities. A beautiful model of an abbey in cork stands near it.

Mr. Baxter, of Northampton-square, is rich in specimens of oil-colour picture-printing. Among the variety of beautiful illustrations of the progress of this art, few are more interesting, or better known, than the small view of "the Great Exhibition," from a drawing by Charles Buckley, Esq. The transparent effect of the roof is admirable, and the number of figures amusing and agreeably diversified.

A handsome frame, containing specimens, let in on a velvet ground, of the application of white marble as a material to paint miniatures upon, exhibited by Mr. Carrick, of Montagu-street. It answers the purpose admirably. The portraits are of Lord John Russell, the Earl of Shaftesbury, Lord Lyndhurst, Major-General McLeod, Samuel Rogers the poet, Thomas Carlyle, Daniel O'Connell, Signor Lablache, &c. They are painted with a softness and delicacy of execution defying all imitation, and rival the most delicate enamel.

A most ingenious and tasteful piece of cork-cutting in bas-relief is exhibited by Mr. Byrn. The subject is a sylvan landscape, with figures engaged in the sports of the period of Charles II. Its form is circular, and calculated for a frame. On either side, meeting at the top, is a tree. Above, in the centre, a hawk is about to strike a heron; and in the lower ground, on the right, stands a falconer, with a hawk on his right thumb, and his left arm leaning on a gate. In the central foreground are two dead boars, watched by one of the dogs used in boar-hunting. On the left lies a stag, and near reclines a peasant youth.

Some notice is due to a superb group of a hawk and butcher-bird. This latter object is absolutely wonderful, as being carved out of a single block of wood.

A splendid model of the "Victoria Grand Necropolis" (a name borrowed from the Græco-Egyptian catacombs at Thebes and Cairo), in a pyramidal form, and capable of furnishing a "last home" for

an almost infinite number of dead, claims much notice in a sanitary point of view. Now that the reckless absurdity of poisoning the living in order to inter the dead within our crowded streets is clearly demonstrated, it is satisfactory to meet with any application of modern science to the removal of this crying evil, combined, at the same time, with a just regard to the reverence due to the departed. It is proposed by Mr. Willson to erect this pyramid to an elevation of 900 feet, being 100 feet higher than the great pyramid of Egypt, and to form within it catacombs capable of holding 5,000,000 bodies; to be built of brickwork, faced with granite, "presenting an elegant and majestic outline, arranging in the most compact manner a multitude of subjects in numerical order, within a given area of 18 acres, easy of access to every catacomb, free from atmospheric humidity, sacred from profanation, and secure as art can make it against the ravages of time," an "impressive *memento mori* to every passing age, and an object of pious veneration to posterity." The approach to be through a lofty Egyptian portal. Within this entrance there are to be two plain chapels, and a register office opposite, to correspond; also four neat dwellings, for the keeper, the clerk, the sexton, and the superintendent. There are to be four central entrances, or avenues,—east, west, north, and south,—intersecting each other in the middle of the edifice. From the base to the summit there is to be constructed a central shaft for the purpose of ventilation, and carrying off any gas that may escape, through the means of tubular drains, constructed under the floors of the central avenues, and communicating with every catacomb. Round the exterior of this shaft it is projected that there should be an inclined plane for ascending and descending to the lantern or obelisk at the top, which might serve for making astronomical or other observations. Zigzag plains, from each entrance, for the purpose of ascent and descent, are also contemplated to be made. It is intended that the pyramid should contain, vertically, 94 stages of catacombs, including those underground, making each stage a distinct cemetery, containing altogether 215,296 vaults. There is to be provided ample means for ventilation and lighting, so that the interior would be visible to the visitor, and might be visited with perfect safety, whilst at the mouth of each vault or catacomb mural slabs and monumental inscriptions may be placed, recording, as now, names, ages, dates, and other particulars. There are, of course, to be almost innumerable cross-passages, easily understood by an inspection of this model. Efficient means are provided for drainage, for the raising of the materials, and for the accommodation of the workmen, who will conduct all their operations with great facility and perfect safety. In the enclosure surrounding the base of the pyramid (which we ought to have stated was to be a square, each side measuring 900 feet), and which is to be from 100 to 200 acres in extent, ample accommodation is also to be provided for the ancient mode of burial, an adequate area being tastefully laid out for the reception of cenotaphs and monuments, or other sculptured tombs, of eminent individuals, who may prefer interment separate from the multitude, or whose virtues may merit such honourable distinction. The ventilation of the passages, notwithstanding the immense number of cells, does as much credit to the designer as the accuracy of the model and its

available neatness do to the workman. Near it stands a splendid font; also an emblematical pier-table and mirror-frame, admirably carved in wood, ready for gilding.

An oak cabinet, richly carved, representing the opening of the triennial convocation in the palace of Tarah, by Cormack, one of the early kings of Ireland, deserves notice.

On the walls are some exquisite specimens of wood-carving, by Wallis, of Louth. Besides the beautiful fruits, flowers, and festoons, we may especially notice a dead bird hanging by its feet from rich festoons, and a group of a snipe, woodcock, and partridge, each group carved out of a solid piece of lime-tree. In fact, were we asked our opinion as to what art in this room showed the highest attainments of English workmanship, we should feel inclined to point to the wood carvings. Another specimen by Mr. Wallis, consisting of an immense nosegay, representing "Spring," composed of 1,000 representations of 47 kinds of spring-flowers and buds, elegantly entwined around stalks of the apple-tree in blossom, and accompanied by their usual attendants, the caterpillar and other insects; the whole is suspended by carved drapery, in the form of ribands, &c., from the head of a lamb, supported by a shepherd's crook, encentred by a nest of the "blue-capped titmouse," with the old birds conveying food to the young brood in the nest, and ornamented with a beautiful grape-cluster and vine-leaves as a pendant,—deserves the highest praise.

The productions of Mr. W. G. Rogers, of London, in wood-carving, comprising, as they do, some of the most successful efforts in this branch of art. Mr. Rogers's fame is well known, and rests upon his extension of the style adapted by his great forerunner in carving, Grinling Gibbons; but he has recently diversified his labours, by adding to his former style of work such as may be truly called the *bijoux* of the art, consisting of works carved in *box-wood*. Amongst the most celebrated of these is the cradle made for and exhibited by her Most Gracious Majesty. It is carved in Turkey box-wood, and this beautiful work is intended to symbolize the union of the royal house of England with that of Saxe-Coburg and Gotha. One end represents in the centre the armorial bearings of her Majesty Victoria, surrounded by masses of foliage, flowers, and birds; on the rocker, underneath, is seen the head of Night, represented as a beautiful female asleep, crowned with a garland of poppies, supported upon bats' wings, and surmounted by the seven planets. The other end, or the back of the head of the cradle, is ornamented with the arms of his Royal Highness Prince Albert; the shield occupies the centre, and around it are scattered, among arabesque foliage, the six crests of the Prince, with the motto, "True and fast." Below, on the rocker, is a head of Sleep, with closed eyes, and over the chin a whimple, which terminates with poppies on each side. Inside the head of the cradle, guardian angels are introduced; and above, the royal crown is embedded in foliage. The friezes forming the sides of the body of the cradle are composed of roses, poppies, foliage, butterflies, and birds; while beneath them rise various pinks, exquisitely imitated from nature. The edges and insides of the rockers are adorned with emblems of royalty, and of repose. Various other specimens are also exhibited by Mr. Rogers; among which, a net, enclosing fish, with shells arranged with studied negligence, also sprigs and flowers

of aquatic weed being plentifully introduced, to increase the effect. Also a trophy, consisting of a pheasant and a woodcock, hung up together, and accompanied by a profusion of fruit and flowers. The plumage of the bird, produced by a few touches, is very successful, and the eyes and general expression of the head afford a striking contrast to those of some birds by the same hand, in which life is attempted to be portrayed.

Near, there is a model ship of cork, the roughness of the rigging, and the most minute details, being all exhibited in a marvellous manner; even the waves of the sea are brought out in the same material. A figure-head for a ship, forming a portrait of her Majesty, deserves some notice.

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Having completed our survey of the Fine Art department, we commence with the passage marked F in plan, lying parallel with the nave, and proceed eastward.

The British and Foreign Bible Society contribute a collection of Bibles in 130 languages. Viewing the whole exhibition as a centralization of the intellectual and industrial efforts of mankind, nothing can be more interesting than the manner in which the word of God has thus been brought home to the eyes and hearts of the most barbarous inhabitants of the earth.

**MACHINES FOR DIRECT USE, CLASS 5.**—On the right are some models of railway carriages, among which a beautiful one, fitted up for her Majesty. The length of the platform is 3 ft. 9 in.; the breadth, 1 ft. 5 in. The length of the body of the carriage is 2 ft. 8 in.; the breadth, 1 ft. 1 in. The interior of the carriage consists of three compartments—a centre, or throne-room, and a saloon at each end. The room in front of the carriage is supposed to be for the royal family, and ladies and gentlemen in waiting, and this communicates by a door with the throne-room. The compartment at the rear of the carriage is for the remainder of the suite, and has no direct communication with the centre. The body of the carriage is surrounded by a promenade, encompassed by a balustrade, supported by variegated pillars. At each corner of the platform is a British lion, with the paws fixed above the buffer-rods, as if to keep them extended. The length of the centre room is 16 in.; that of the end rooms, 7 in. The royal chair is situate at the back of the centre room, and is surmounted by the royal arms; there being also the Prince of Wales's feathers, and the star and garter in other parts. The throne and couches are of mahogany, cushioned with light scarlet velvet, and trimmed with lace, to match. The doors and compartments are glazed, and have moveable sashes. The body is painted a neat brown colour, and has circular ends. There is a door at each end, emblazoned with the royal arms, and a door at each side, leading to the centre compartment, bearing the Prince of Wales's feathers. The roof is also surmounted with regal crowns. The hanging blocks are carved in wood, with a scroll-work, having a tiger in the centre. The wheels are chased with the stem and leaf of the vine; the axle-guards are also ornamented. The buffer springs and rods, bearing springs and tension-bars, are all in working order. The carriage is supported by eight wheels. At first sight, it would appear that a carriage of such length as to require four pairs of

wheels, would not be calculated to turn curves with safety, as the flanges of the wheels, being in a direct line, might interfere with the curved rails. This difficulty is overcome, by placing two pairs of wheels near to each end of the carriage, leaving a considerable space in the centre. This arrangement allows it to turn a curve with nearly the same facility as if it had but two pairs of wheels, while it gives the advantage of much less oscillation, and adds greatly to the security; for, if any particular wheel should fail—by the tire of the engine-wheel breaking—the remaining wheel at that end of the carriage would still support it.

Two geometrical staircases, of most graceful form, although the steps are too narrow to be altogether comfortable, are beautiful, both for their economy of room, and the excellence of the material. Many people, however, appeared amusingly shy of trusting themselves down them.

Nasmyth's steam hammer forms a prominent feature, not only at the Exhibition, but in all engine-factories and iron-works. It is wonderful as a piece of mechanism, and perhaps speaks more for the advance made of late in the perfection of machinery than any modern piece of mechanism. That a machine subject to such heavy concussions should be at the same time capable of the most perfect adjustment in action, without being liable to derangement, is wonderful. The hammer can not only be made to come down with the combined action of gravity and the pressure of steam, which will give the most violent blow it is capable of producing, but it can be regulated with sufficient nicety to crack a nut. The principle on which it acts is simple enough; the cylinder is above, the piston-rod passing through a stuffing-box beneath, is immediately connected to the hammer; one of the difficulties which had to be overcome was how to connect the hammer to the piston-rod, without communicating the serious concussions of the hammer to the piston; this was done by packing the end of the piston-rod in the hammer between pieces of wood, and keying it down, the wood was sufficiently elastic to prevent the concussions affecting the piston; the action of the valve and regulating apparatus is too complicated to enter into.

One of the hydraulic presses used in raising the tubes of the Britannia-bridge now claims our notice. It is marvellous to find what tremendous power can be attained by the most simple means. It is a single press, and we believe the most powerful ever made. This press was placed at the top of one of the towers or piers of the bridge. Being a single press, there is one cylinder in which the plunger works. At the top of the plunger is fixed a cross-head, from each extremity of which the chains hang; these chains were connected with the tube below; the cross-head works through two guides secured to a girder above, the chains being secured to the tube below, and to the cross-head above, the plunger being forced up, raised the tube. As soon as one lift was accomplished, the tube was packed up underneath, the chains secured above, the fastenings which connected the chains to the cross-head were loosened, and the plunger, with the cross-head, was then allowed to descend to prepare for another stroke; the chains were again made fast to the cross-head, and the press was then ready for another lift.

Just by it is a *fac-simile*, in pollard oak, of a chair which formerly belonged to the celebrated Abbot Whyting, of Glastonbury Abbey, and in which tradition states he sat during his trial when he was

condemned to death, in the reign of Henry VIII. The original is in the possession of the Lord Bishop of Bath and Wells; as well as a model of it in ivory, on a scale of  $1\frac{1}{4}$  inch to the foot. The latter stands on a carved ivory pedestal; the design of it is taken from a portion of the magnificent architecture in the Vicar's close.

An immense crane, used by Messrs. Fox and Henderson, in the erection of the Crystal Palace, cannot fail, if only from its size, to attract notice. But, to say the truth, everything employed in the almost magical erection of this wonderful building possesses some attraction. In the Railway department, which lies to the right of the marine engine-rooms, are exhibited several inventions for the furtherance of safety, comfort, speed, and strength. There are also improved locomotive engines and carriages, characteristic of this age of machinery, which is every day applied to some new and important purposes. Two mammoth engines stand prominent,—the “Lord of the Isles,” sent by the Great Western Company; and the “Liverpool,” by the London and North-Western. The “Lord of the Isles” was built for the Great Western Company, at their works at Swindon, and is capable of taking a passenger train of 120 tons at the rate of sixty miles an hour. It is of 743-horse power, and the weight of the engine and tender when in full working order is 52 tons 13 cwt. The cylinder measures 18 inches in diameter, the length of stroke 24 inches, and the maximum pressure of steam is 120 lb. The driving-wheel is 8 feet in diameter. This engine, large as it is, is catalogued as “one of the *ordinary class* of engines constructed for this company for passenger traffic since 1847.” As if in opposition to this, is a beautiful little fairy-like engine, called the “Little England,” adapted for light traffic; a pretty little toy. Then there are also railway carriages made of *papier mâché*! and others unpainted, leaving the wood—an exquisite specimen of East-India Moulmein teak—uncovered except by a thin coat of varnish. We also notice new signal apparatus to prevent accidents; modes of communication between the passengers and the guard; improved breaks, buffers, and railway appointments generally, that would, it were to be hoped, promise that the day of railway accidents had passed away for ever.

In this department are exhibited, by James Watt and Co., some large marine engines of the collective power of 700 horses. They are designed for driving the screw propeller by direct action. There are also shown some models made in 1785, showing the early application of steam power to locomotion.

“Could James Watt return to life and see the mighty revolution caused by his discovery, how gratifying would it have been to him to see these ocean steamers, which float across the Atlantic, the triumph of art and the admiration of the world.” Near to these, Messrs. Penn, of Greenwich, exhibit a pair of marine paddle-wheel steam-engines, of 12-horse power each, which will illustrate, on a small working scale, the perfection attained in the construction of such engines. This pair of engines will, we understand, be kept at work, for the double purpose of exhibiting their action and of supplying some of the steam power that will be requisite for driving the various mechanisms to be exhibited in motion. Messrs. Penn have also a pair of 30-horse power marine steam-engines for driving a screw propeller, and some highly-finished models.

We now pass to the carriage departments. Here the objects are

so varied, that we content ourselves with an amusing "abstract" of the contents of this department, for which we are indebted to the *Times*.

"Among the English carriages are to be found facilities for locomotion in multiplied forms, but nothing to recall the models of public conveyance in this country twenty years ago; nothing to remind the spectator of 'the road.' In their stead, and sidling along the space devoted to equipages, may be seen huge locomotives and long trains of carriages that run upon iron highways. That juxtaposition is suggestive of reflection, not only with reference to past changes, but as to others that may yet be in store for us. Shillibeer's invention is the only public conveyance that now holds up its head in the presence of its vaporous rivals. There are omnibuses exhibited,—one an immense caravan, too large for London use, contributed by Kinross, of Stirling; another, less objectionable in point of size, and possessing some improvements, yet still obviously defective in construction. The public have looked with great anxiety, but in vain, for something likely to afford an abatement of the 'bus nuisance. It remains without any prospect of relief from the Exhibition, and they can only wait with martyr-like patience for the time when some great deliverer will arise to free unhappy 'inside fares' from their present thralldom. The street cab is only a public conveyance in a certain sense, for the hirer of it has it absolutely at his private disposal for the time being. The extensive use made of it might induce one to suppose that a large class of exhibitors would have come forward in this part of the carriage department. But it is not so. There is, in fact, only one specimen of the 'Hansom' class,—among all this display of vehicular ingenuity: no new forms of construction, no fresh patent safeties appear to lead the fashions of 'the stand,' and to engage the preference of 'fares.' In the solitary contribution referred to, the driver is brought down a peg from his elevated perch behind the hood of the conveyance, and the wheels are of lighter make. The body, too, is brought nearer to the ground and rendered more accessible, but the main features of the old style are preserved, and no attempt is made to secure a registration of distances. Another class of conveyance let out to hire has also its representatives. The enterprising Shillibeer exhibits two of his patent funeral carriages, in which are combined the hearse and mourning-coach in one vehicle. These dismal-looking equipages are hemmed into a corner by a swarm of jaunting-cars, suggestive of anything but funereal gloom. However, the presence of Bath and invalid chairs in great numbers, and at no great distance off, is felt to be more appropriate. The principle of the gilded pill is conspicuous in the elaborate manner in which these locomotive aids to infirmity are fitted up. The carriage department retains one great lumbering waggon, which is surrounded by a number of velocipedes. A greater contrast the mechanical world hardly contains than these two classes of machines,—the former, bulky and unwieldy, like an elephant; the latter, all limbs and joints, without body, like a May fly. There is an invalid carriage in the collection which attracts some attention from the appearance within it of a very charming and healthy-looking young lady in wax, who is reclining at full length, has her head propped up with pillows, is in dishabille, and can be shoved into or taken out of the conveyance like



the drawer of a table. She has been more fortunate than another specimen of her sex, formed of the same delicate materials, and intended for the illustration of a useful little invention called the 'iris,' or universal reading and copying desk. The inventor intended to show how well adapted the 'iris' was for reading comfortably in bed, and accordingly he had a young, interesting-looking lady modelled in wax for that purpose, but some cruel Goth sat upon her by mistake after she had been conducted in safety to her allotted space. The remainder of the carriage department is chiefly occupied by pleasure equipages of every description—from gigs, dog-carts, and buggies, up to barouches, phaetons, and equipages for state occasions. The variety of form, and the elegant and sumptuous style of fitting displayed in the collection, must excite unqualified admiration; nor will foreigners fail to gather a high idea of the luxurious habits of our wealthier classes from the specimens exhibited of the equipages which they use. There are vehicles there to gratify every taste, from the close carriage cushioned with satin, up the step of which the rider ascends as to a throne, to the light pony phaeton, in which feminine whips dash sparkingly along the drive, or the fast-looking trap or dog-cart, the pride and glory of undergraduates and cornets addicted to tandem. In the last-mentioned class the collection is particularly strong, and one contributor (an amateur) seems gifted with a peculiar genius for construction in this style. He has infused into his designs a degree of novelty which will excite a perfect blaze of enthusiasm in the sporting world. Never were such knowing-looking vehicles seen in the world before, and never did an artist bring out more strongly the provision-basket and the game-bag as appendages to a pleasure-trip. But for these, his machine would have nothing more bulky than the few square inches of deal required for handling the ribands effectually, and the splash-board as a protection against mud."

We now turn to the right, and enter the large space appropriated to the COTTON MACHINERY IN MOTION, in beholding which the visitor, even if he have spent some time in Manchester, cannot fail to be struck with wonder and delight. Well, indeed, may it be said, that "the steam-engine has infinitely increased human comforts, and rendered cheap and accessible all over the world the materials of wealth and prosperity. It has armed the feeble hand of man, in short, with a power to which no limits can be assigned, completed the dominion of mind over the most refractory qualities of matter, and laid a sure foundation for all those miracles of mechanical power which are to add to and reward the labours of after generations. Already it has become a thing alike stupendous for its force and its flexibility. The trunk of an elephant, which can pick up a pin or rend an oak, is nothing to it. It can engrave a seal, and crush matters of obdurate materials like wax before it; draw out without breaking, a thread as fine as gossamer, and lift a ship of war like a bauble in the air. It can embroider handkerchiefs and forge anchors, cut steel into ribands, and impel loaded vessels against the fury of the winds and the waves." This is fully exemplified in the wondrous scene now before us. Crowds may be seen at all hours of the day collected round the various machines which form such important agents in our manufactures, viewing them with

curious and intelligent interest, and although half deafened by their noise, apparently yearning after information as to the principle of their structure and operation.

If the visitor go out at one of the western doors, he will find in the inclosure at that end a building in which are erected a number of large steam-boilers, and he will see preparations for erecting a still greater number. From these boilers flows the steam which animates the whole of this section of the Exhibition to which machinery is appropriated. A large steam main proceeds from this boiler-house, buried in the ground in the same manner as are the mains which supply gas and water to the metropolis. This main, being conducted into the building, is carried through it under the flooring along its northern wall, and is continued to the limit of that part to which the machinery is consigned.

From the Hartford Works, of Messrs. Hibbert, Platt, and Sons, Oldham, there is exhibited a most important and complete set of machinery for cleaning, carding, spinning, and weaving cotton, all finished in the highest style of workmanship. It consists of an improved patent opening and cotton-cleaning machine, in which all fibre cleaned in it is passed between cylinders, so constructed, that motes, seeds, &c., are thrown down beneath it, making the operation of cleaning exceedingly simple and cheap, the power required for cleaning three thousand pounds per day being from one to one and a half horse power, according to the state of the material. Single scutcher and lap-machine, in which the patent consolidating calender-rollers perform the felting of the cotton in a superior manner, and so compress its bulk as to admit an increase of forty per cent. on the lap-roller, by which a considerable saving of labour is effected at the carding-engines. Breaker carding-engines: the novelty of these machines consists in the method of feeding the card by means of a dish, straight-edge, and large roller; in the cylinders, doffers, rollers, and strippers, being made of iron; and in the method of adjustment of the bearers or carriers for the rollers and strippers, while the method of applying the bearings, &c., for carrying the rollers is so simple as to be capable of the finest adjustment. Lap-machine, in which the patent consolidating-calenders are also applied to this machine with the same advantage as in the scutcher. Finishing carding-engines: the laps made in the last machine are taken in by this, and the fibres are again drawn, combed, and so completely straightened, as to insure a more perfect evenness in the web, which is then delivered and coiled into cans. These machines are supplied with the same improvements as the breaker carding-engines. Grinding-machine, used for grinding and sharpening the teeth of the cards on the roller and flats of the carding-engines. Drawing-machine, furnished with a series of self-acting guides, which stop the machine whenever the stiver breaks in passing from the can to the roller; it is also fitted up with coilers and revolving motions to the cans. Stubbing-machine of twenty-eight spindles, used for drawing the stivers prepared by the last machine, and afterwards twisting and winding them in bobbins. Second-stubbing, or intermediate machine, of fifty-four spindles, used for doubling and drawing the stubbers, and twisting and winding them on bobbins for the crulls of the roving-machines. Roving-machine of 120 spindles, the improvements in which consist in the self-acting motion of stopping

the machine when the stiver breaks ; in the patent bearings or collars in which the spindles work, and the method of fitting the flyers on the tops of the spindles, whereby a greatly increased speed is obtained ; and in the application of the double patent presser to the flyers, which preserves the equilibrium of the spindles whilst working, whether the bobbin be full or otherwise. Weft and twist self-acting mules of 402 and 348 spindles, used for drawing or elongating the fibres and twisting and winding the yarn.

Flax machinery, by Higgins and Son, of Manchester, exhibits many valuable modifications on the old plan.

Leaving the Refreshment Room on the right, we must notice Mr. Harrison, of Blackburn, who exhibits a power-loom adapted for the manufacture of lighter articles in cotton, wool, and flax, as well as a larger one, adapted for heavy goods.

A worsted damask power-loom well deserves attention, if we consider the extensive application of this elegant article as a substitute for more costly materials in furniture. We cannot help feeling some interest in the process of its manufacture.

We next notice a model of Messrs. Randell and Saunders's sawing-machine, which they have in operation at their quarries, Corsham, near Bath, for cutting stone from its natural rock. The model is shown in operation in a stone model representing one of the headings in Corsham Down Quarry ; it works eight saws, which in the original machine are 24 feet long. By a simple arrangement each saw is allowed an action quite independent of the others, and can be worked at any angle which may be required. In case of any impediment, it is arranged for either saw to stop before it is strained, and without interfering with the action of the others. This machine does the work of seventy men. When the stone is cut into blocks, it is removed by a traversing-crane, worked by the same ropes which work the saw-frame, and both are driven by steam power.

Passing the Refreshment Room, and bearing to the right, we notice models of two water-wheels of 140-horse power each, erected by the Devon Great Consol Copper Mining Company.

We must not omit to mention, especially for the benefit of amateur turners, the unique and beautiful collection of lathes, and samples of turning in ivory, from the celebrated establishment of Holtzapffel, Long-acre, which occupy a good position in the mechanical department.

The next object of interest is Mr. Appold's centrifugal pump. When in operation, the sound of water rushing as it were from a lofty eminence, calls the visitor's attention to the locality of the little powerful engine. The water is not discharged through a spout or orifice, but it pours over two sides of a tank, about four feet wide, in a continuous torrent, the water being raised above the edges of the tank two or three inches. In this machine there are no acting valves, no cylinder or piston, as in other pumps, but the water is raised by what is commonly called centrifugal force. The action of this force is most clearly perceived in those centrifugal pumps, which consist of a straight perpendicular pipe, and two hollow horizontal arms, to which a rapid rotary motion is given. The lower end of the perpendicular pipe being immersed in water, the rotary motion causes the water in the horizontal arms to be thrown out, water rushes up

the perpendicular shaft, to supply the place of the fluid ejected, and by this means a continuous and rapid flow takes place, so long as the machine is kept in action. There are many inconveniences, and much loss of power attending this arrangement; consequently, centrifugal pumps have been hitherto little used. In the application of the same principle by Mr. Appold, the inconvenience of the old form is remedied; and, to judge from the effects of its action, it far exceeds, in capability of discharging, within a given time, any other known mode of raising water, not excepting the hydraulic belt. Instead of the straight shaft and horizontal arms, Mr. Appold's pump-apparatus consists of a circular fan, closely resembling in form the blowers which have recently been brought into use as substitutes for bellows. Two disks, with holes in their centres, are joined together by curved partitions, which form about eight separate compartments. A rapid rotary motion is given to the instrument when immersed in water, by which means the fluid is thrown out of the curved compartments by centrifugal action, a fresh supply rushes in through the central openings, and thus a continual flow is maintained. The water is not, however, thrown about in the air, for the rotating instrument is placed under the surface, and raises the fluid to the top of the tank, from which it is to flow. An instrument ten feet in diameter will pump 140,000 gallons per minute; one double that size will pump 560,000 gallons; and a machine forty feet in diameter will discharge the enormous quantity of 2,240,000 gallons per minute. Such a power, brought to bear on the draining of marshes, for which it is specially applicable, would prove most effective. The loss of power, in the use of this centrifugal pump, it is calculated, would not exceed thirty per cent. With the one-foot pump exhibited water has been raised to the height of sixty-seven feet, when moving with the velocity of 1,323 revolutions per minute.

Messrs. Maudslays and Field, the well-known engineers, exhibit a steam-engine of 6-horse power, employed in working a coining-press on a new construction. The mode by which the impression on the metal is produced, and the method of working, is different from any that has hitherto been adopted; and the sight of the press in action will form an interesting feature of the Exhibition. It has been proposed that it should be employed in stamping medals, impressed with an appropriate design, to be sold within the building, the proceeds to be at the disposal of the Commissioners; but the sale of anything beyond refreshments within the precincts of the Crystal Palace has been so forcibly prohibited in the rules hitherto published, that the Executive Committee are reluctant to depart from them; at the same time, it is felt that much of the interest attached to the possession of such medals would depend on having seen them come from the press. The Committee are thus on the horns of a dilemma; but it is very probable that in this, and in some similar cases that must arise, exceptions will be made, under proper regulations, to the general rule. Messrs. Maudslays and Field, in addition to the coining-press, have contributed several models of different kinds of machinery and engines, which will form an illustration of many of the important works they have completed.

We next notice the collection of models contributed by Mr. W. G. Armstrong, of Newcastle-upon-Tyne. They include cranes, corn-lifts, and a machine for unshipping coals. The pressure of the water

is obtained by a small steam-engine, forcing water into what is technically termed the accumulator, where the water acquires a certain pressure. When the crane is required to act, the water is allowed to press on a piston in a cylinder, and as the piston moves from one end of the cylinder to the other, a chain being attached to the end of the piston-rod passes over a series of pulleys, by which the stroke of the piston is multiplied; the chain then passes over the jib of the crane, and being secured to the object required to be raised, the hoisting is thus performed. By causing the chain to pass through a system of pulleys, the stroke of the piston can be multiplied to any length; the pressure of water is also made subservient to swinging the crane.

No one will forget the model of the first proposed building for the Exhibition, although, when he looks at what *has* been worked out, he will hardly regret its non-adoption.

Messrs. Cunningham and Carter exhibit their new system of propulsion on railways; it is on the atmospheric principle,—a principle, we fear, more ingenious than useful or practicable.

Messrs. Gaines, Sanders, and Nicol, of Birchin-lane, have contributed a very interesting model representation of the process of manufacturing silk and felt hats. The model, which is divided into two parts,—one for silk and the other for felt,—is again subdivided into the various apartments required for carrying on these two branches of hat-making. There are a number of model men and women pursuing the different branches of their art, the figures being  $6\frac{1}{2}$  inches in height, and all the instruments of their art on the same scale, including irons, rounding-machines, rules, brushes, bottles, scissors, needles; and in one case we observe a miniature pint of porter, but of course not in the women's department. In addition to the illustration which the model gives of hat-manufacture, the object is to show the peculiarities in the process of making the peculiar kind of hat, the body of which is made of linen and cork, covered with silk plush, of unusual fineness, intended to show the perfection to which this branch of art has been brought. In the first department, Lilliputian hatters are seen in their different shops, diligently executing the different branches of their trade. To produce a felt hat, the workmen are busy in the various processes peculiar to its manufacture. In this section, also, the materials are submitted to view, being two kinds of wool,—cleared rabbits' and carded Saxony,—which, by being rolled together, become matted, or felted, so as to form the material of the felt hat. This part of the model is furnished with its large hot-water tank, around the planks of which the workmen are standing, to carry on their scalding, felting, and blocking operations.

Our attention is next directed to a model of London Bridge, and other specimens to illustrate a method of washing and watering the streets of the metropolis. The method by which the inventor purposes to effect his objects in streets, lanes, and large thoroughfares, is the substitution for the usual *stone* curb, one of cast-iron, perforated at the sides, and charged with water at convenient distances from the present mains, and, by means of a stop-valve, can always be applied for washing or rendering the streets sufficiently wet to enable the scavenger to thoroughly sweep and clear away the mud, which a great portion of the year he is unable to do from its adhe-

sive properties; it merely then gets smothered over to become dust in hot weather, or soft foetid mud in wet, producing dirty foot and carriage ways, and consequently dirty houses in each case. The application for watering purposes is the same, the supply being regulated by local requirements, state of the streets, roads, &c.

Close to this model, Messrs. Chambers, Day, and Millward, of Birmingham, show their weighing-machines. They are on an entirely new principle, and weigh from a quarter of a pound up to twenty tons; and are so delicate, that the slightest weight will turn the scale. They also exhibit a model of a sheep in its pen, in the act of being weighed.

Turning round to the left, and proceeding westward by the furthest north passage, we come to Waterlow and Son's steam machinery for envelopes, &c.

Near to this is exhibited a model of the first paper-making machine ever made in this country: it will be examined with interest; but for *printing*, we must turn to Applegath's printing-machine. Our limits preclude the possibility of a description, but we may briefly observe that several copies of a paper may be thrown off at each revolution of the cylinder, which is placed vertically; the blank sheets of paper are placed over an horizontal drum, pass down between two sets of vertical rollers and tapes, thence continuing to the horizontal cylinder, which contains the type and also the cuts, which form a novelty in this particular machine. The wood, instead of having a flat surface, is curved to the same extent as that of the type, and the artist is required to arrange the lines of his drawing accordingly. The messenger rollers receive the ink from the ductor rollers, from which the ink is received on the surface of the inking-table.

We will next point out the lace-gassing machinery of Messrs. Burton and Eames. In the manufacture of lace, muslin, and other delicate fabrics, it has been found that, when the article comes from the loom, its surface is covered with a multitude of small hairy fibres, which more or less disfigure it, and which it is necessary to detach by some process which will not injure or deface the lace. The former method for removing these fibres from lace and other fine fabrics was as follows:—An iron cylinder, whose length was equal to the width of the lace and muslin, was made red hot; the lace or muslin being stretched tight, was then made to pass in contact with this red-hot iron, being pressed upon it with a certain force, and moved over it at a certain speed, the speed and pressure being so regulated that the lace remained in contact with the red-hot iron a sufficient time to burn off the superfluous fibres, but not a sufficient time to destroy or injure the delicate fabric itself. If the velocity and pressure were allowed to exceed a certain limit, the fibres would be imperfectly removed; and if it fell short of that limit, the lace itself would be damaged or destroyed. Experience showed the proper velocity and pressure for each description of fabric. The most delicate fabrics were thus made to pass, without injury, over the surface of a red-hot iron. A row of gas-burners will be observed in the machine, the length of which corresponds with the lace to be "gassed," as it is called. The lace is made to pass through this row of gas-flames with a certain velocity. It is possible to give to the lace a velocity so great that the flame will not have time to destroy a single particle of the superfluous fibre; and, on the other

hand, the velocity may be retarded so as to destroy not only the fibre, but injure or destroy the lace. By experience, a certain speed is ascertained, which will give to the gas-flames the time necessary to destroy the fibre, without damaging the lace.

Among the collection of weaving-machines, both in the British and Foreign department, few are more interesting than the English stocking-frame, worked by hand-power, which, with all the advantages of modern improvements, is still worked on the same principle as that invented at the close of the sixteenth century by William Lee, of St. John's College, Cambridge, who was, according to the legend inscribed in the Stocking-weavers' Hall, which forms the subject of one of Elmore's pictures, induced to develop his mechanical talents by poverty and enforced idleness, while his young wife was knitting stockings.

We now return to the nave; and begin with the East-India department, which comes next to that of the Fine Arts.

INDIAN DEPARTMENT.—Some models of Indian temples in stone, though surpassed by the grand model of a subterranean temple in the Bodleian library at Oxford, yet give a good idea of the different styles predominating among the Hindoo and other castes. Among the many domestic implements in copper and brass, a self-feeding lamp, the bowls of which represent peacocks, well deserves notice. As fast as the oil is consumed, a fresh supply trickles into the breasts of the birds, and renovates the expiring light.

After glancing at some rough cloaks, resembling blankets, and some carpets from Bangalore, somewhat recombining the dull hues of Turkey with the coarse, thin fabric of Dutch carpeting, we are struck with a superb collection of Indian figures. So quaint and expressive are these little models, and so various their dress, attitudes, and employments, that we can desire no livelier illustration of life in India. For instance, there are representations of the servants needed in an Indian household,—the valet, the cook "frying a fowl," the pipe-preparer, and all the infinite divisions of domestic labour. Then the trades: the barber shaving a dark man's head, two sawyers at work with a most primitive saw, a washerman beating out clothes on a fluted board, and a water-carrier, after the manner described in the "Arabian Nights," with his leather bottles.

A little farther on is a complete representation of an Indian fair, with the principal buildings, modelled with the exactness of imitation for which the Hindoos are so justly celebrated. Merchants expose their wares; camels unloaded, repose; soldiers pile their arms; the juggler performs; the story-teller tells his tale; the horseman grooms his Arab steed; the elephant, with grass in his trunk, pricks up his ears as his master beckons to him; some smoke, some eat; a great lord rides through in state, a fakeer or saint begs—it is like a bit in an Indian romance.

The leading object among the Indian collection is, undoubtedly, the magnificently-fitted tent, which fully realizes all our notions of the exquisite luxury of Oriental despotism. The furniture, however, which chiefly consists of exquisitely-carved tables, covered with chess-boards and men of the most sumptuous make, must be regarded as British-Indian in manufacture. Whatever may be the richness of material supplied by this El Dorado, the application of

English taste has a most salutary effect in chastening the character of the works produced, and in directing the natural dexterity of the natives to principles of art more perfectly developed than the cruder attempts of uncultivated ingenuity. The exquisite rugs in green and crimson velvet, adorned with sun-like radiated shields of gold, which adorn the walls; the rich carpets placed above the mattings, the superbly-carved sideboard in black wood, the fans and fly-flappers of every design, and the bland odour of the sandal-wood, remind us of the haughty potentates of the "Arabian Nights." We can almost see the king of the Indies, and the intelligent ape (the transformed kalendeer, as Mr. Lane *will* call him), playing at chess together.

In the next compartment, which was not ready until some time after the Exhibition opened, we observe some interesting specimens of lapidary. They are the production of Budr-oo-deen Ulee Khan, the well-known chief of seal-cutters in Delhi, who has supplied all the highest authorities for years, and has exhausted his skill in producing these *chefs-d'œuvre*. The seal for her Majesty is a cornelian, with the corners neatly cut off; the size about one inch square. On it is cut—what, translated, reads thus:—

"First Monarch of the world, as Solomon in magnificence, with a court like Saturn, Empress of the age. Sovereign of the Seas. The source of beneficence. By the grace of God, Queen of England and Ireland. Ruler of the Kingdoms of Hindostan. Defender of the faith of Christ, the great Queen Victoria."

A seal for Prince Albert is of the same size, but cut on a blood-stone, to the following effect:—

"The distinguished by the aid of God. The noblest of the family of Brunswick. The honoured companion of the great Queen. Prince, highest in rank, great in dignity, the chief in excellence of the English Court, Albert," &c.

The artist has also prepared two beautiful emeralds for seal rings, to be presented by himself as specimens of his art. One for the Queen, three-eighths of an inch in length, by two-eighths in breadth, on which is beautifully cut, when rendered into English from the Hindoostanee—

"Sovereign of the sea and land. The just by the favour of God. Governor of the world (or the seven climates), Queen Victoria."

The other, for Prince Albert, is of the same size, but has simply the Christian names before enumerated.

An Indian state bedstead, intended as a present for her Majesty, and some rich shawls forwarded by Goolab Sing, which he has directed to be placed at the disposal of her Majesty, well deserve notice. The collection of jewels is also remarkably fine, and the model of the great Nizam diamond, rivalling the Koh-i-noor, will be regarded with interest. The Dacca muslins are of the most extraordinary degree of fineness; and a dress for one of the dancing-girls of India will, we apprehend, excite some attention among the fair portion of the visitors, on account of the extraordinary dimensions of its skirt and flounces. The silver filagree-work sent over is of the most extraordinary character, and is calculated to excite astonishment, not merely at the patient labour but the exquisite ingenuity of the Indian workers in metal. The two alabaster chairs at the end of this compartment have a truly regal appearance, and are fit representatives of a country where many successive dynasties conquered



and flourished, and were overcome, long before the name of England was ever heard of.

To describe the objects of Indian affluence which occupy this space would far exceed our plan or our limits. The ingenious pottery, the specimens of unwrought silk, followed by every variety of cloths, carpets, &c., and the glass case, but one of many, filled with fancy cloths, brocaded in gold, are all satisfactory evidences of the powers of India to enrich, and of Englishmen to take advantage of those riches. After looking at some daggers, very richly ornamented, we have another excellent lesson in Indian domestic life, in a complete set of models of carriages, palanquins, and vehicles for travelling, rivalling the most recherché models in our toyshops. On the other side are a variety of models of boats, not only accurate and neat in their details, but picturesque in their rough material. We must not omit to notice, in the same place, a projected pier for crossing the Madras surf, by Captain Chishold.

Another set of amusing illustrations of Indian life is to be found in the collection of nets, fishing-rods, and other piscatorial implements, together with an ingenious model, representing the mode of placing stakes and nets in Bombay. The snake-boat of Cochin also merits notice for its light and curious construction. Nor must we forget a most superb parasol, with a handle of solid silver.

Some clever figures in pith justify what we have said on a former occasion respecting the power of ingenuity to overcome the difficulties of material.

Within a case, surrounded by a rail, in addition to the Lahore jewels, they have now the "Durria-i-Noor," or "Sea of Light," an immense diamond, which is beautifully cut and of the purest water. The value of this gem is said to be £300,000. It stands as the central ornament of an armlet, with ten smaller stones around it; a necklace of 224 large pearls, and a shorter one of 104 smaller pearls; a necklace of four large rubies, a pair of emerald armlets, a carved emerald and diamond turban ornament, an emerald and diamond bridle and martingale, a gold-mounted saddle, set with diamonds, emeralds, and rubies; a magnificent brocaded robe, richly decorated with pearls; and an emerald girdle, the stones in which are of immense size. These emeralds fetch a high price in India, and some of them which have maxims from the Koran engraved on them are inestimable in the eyes of the Indian princes, and serve as talismans. There is also a beautiful model of a cannon, in mother-of-pearl. A model of an ordinary steam-vessel appears in very matter-of-fact contradistinction to so much of almost ideal magnificence.

While observing the splendid models of ships, we must take notice of a piece of iron bolt of the ship *Cornwallis*, which was in the ship twelve years, and under water eight years; also a piece of timber belonging to the same vessel, and subjected to the same trial, proving the durability of teak-wood; some cannon, and some other vessels—among which we may specify the model of an Arab bugla, built at Bombay, with the regular stern of a British vessel, and with quarter galleries, very handsomely carved, and a model of an almost extinct vessel, called a "Don," bring us to the

TRANSEPT—INDIA continued.—Superb shawls, dresses, scarfs, and other articles of Oriental extravagance, make us rejoice in the com-

paratively economical style of costume adopted in our own country. Four caps, in particular, and a pair of slippers, set thick with precious stones, and some muslins figured in gold and silver, only conduct us to another compartment stored with equally rich articles. In the centre is a crimson dress, most superbly embroidered, and near it a shawl in silver and gold, covered with curious devices representing men, elephants, and other animals. The quaint monstrosity of the pattern is heightened by the sumptuousness of the material. We must also notice a magnificent shawl in scarlet, gold, and silver.

The next compartment again recalls us to the practical study of Indian life. A beautiful model of a loom, and some domestic articles in hardware, remind us that there are other people in India than nabobs and princes—other wants of life besides cloth of gold. A still more pleasing lesson is conveyed in the complete model of a silk-manufactory, representing various stages of the process, and some of the raw material in its original chrysalis state.

We must now, in pursuance of our plan, cross over to the other side of the nave, still keeping to the Indian department. After surveying some superb horse-trappings, and another pretty model of a Hindoo temple, we are again pleased by the excellent models of the machinery connected with the preparation of the sugar-cane. It is but lately that we have enjoyed the effects of a liberal policy in cheapening sugar, and these native implements for its production bear a corresponding interest.

To us, who have arrived at a pitch of excellence in agricultural implements and preparations, who have brought the details of machinery, and even the power of the steam-engine to bear upon the surface of old mother Earth, the large collection of agricultural implements, rough carriages for timber, ploughs of the most amusingly primitive, and apparently ineffective make, are at once diverting and instructive. To the antiquarian, moreover, these pretty models are especially interesting, akin as they are, in form and application, to the oldest known implements of the oldest and noblest art of the patriarchal times. It must be borne in mind, that many of these contrivances, though of little avail in our own country, are particularly well adapted to the soil for which they are intended. The zoologist will be pleased with the character and anatomical correctness of the figures of the cattle employed in the labours of the plough and the wain.

A carpet, on the wall, executed by the convicts of Gornettling, deserves notice, although rude.

Among the natural productions with which this department is rich, a circular slab of Lingoa wood, obtained by taking in the full extent of the spur of the trunk, measuring 9 feet in diameter, is remarkable for its hardness, and for the fine polish which it takes.

Passing the various specimens of cotton in its rough state, which we can ill recognize in the finished fabrics which we now produce, we come to a lot of India-rubber articles, in all the popular shapes, such as bottles, shoes, &c., as well as in the very (in India) unpopular form of small alligators! We cannot commend them as works of art, although the material is plastic enough; but they are certainly very amusing.

The wings and feathers of the Elytra beetle are formed into some garlands of great beauty and brilliancy. So bright is the green of

the armour of this insect, that it is ingeniously used in some brocaded muslins, and presents the appearance of rich emeralds.

“Bird’s nest soup” is one of those eatable curiosities, upon which the Chinese are conventionally supposed to exist; and certainly, if the usual compound of straw, leaves, wool, and hair forming a bird’s nest, be considered, their taste is, to say the least of it, eccentric. These nests, are, however, formed of a gelatinous substance, not unlike gum-dragon in appearance.

A model of Lahore, exhibiting a complete view of that city, surrounded by its ramparts and trenches, is remarkable for its minuteness. Every house is distinctly represented, and the proportions, notwithstanding the smallness of the parts, are wonderfully preserved.

After looking at some models of cannon, arms, clubs, &c., we are struck with a mail shirt and cuirass united in one garment, of delicate and compact workmanship; but our admiration is soon transferred to a most exquisite case of jewellery. The gold tassels, and the superb devices in gold and precious stones are, however, but a continuation of previously described magnificence. As we leave the corner of the transept, we observe a matchlock exquisitely enamelled, and another collection of cloth of gold, rich shawls, &c. We again cross the transept, and come to—

**JERSEY AND GUERNSEY.**—A gun, by Jouhaud, exquisitely inlaid with gold and silver, with case complete, takes to pieces readily, and can be used as a rifle, a fowling-piece, or a pistol. It cannot be discharged by accident, having a secret spring. The stock is admirably carved. We must also notice a splendid piece of cabinet-work, forming a chiffonnier, an *escritoire*, and applicable to other uses, the interior fittings being beautifully finished with solid satin-wood, the whole formed of oak, beautifully carved and polished, the panel’s tapestry representing the emblems of England, Scotland, and Ireland; the back is splendidly carved with figures in *bas-relief*, the expression of the faces beautifully shown, the design being King John signing Magna Charta. It is exhibited by Le Fèvre.

Mr. Amy exhibits a model barque, rigged and fitted complete, made by himself last winter, when unable to work at his trade from ill-health (he being a ship-carpenter). Mr. Amy states that all the timbers are of one mould, certainly a peculiarity; and if the model is capable of being applied to large vessels, a great advantage to ship-building.

There is an interesting collection of 104 specimens of wheat, rye, &c., of different kinds.

We must not forget a beautiful model, in paper, representing the landing of her Majesty at Victoria pier, St. Helier’s, September 3rd, 1846. A Mr. Alleond contributes an ingenious contrivance for determining the distance run by a ship, and also to determine the ship’s place on the chart. In works of art, embroidery, &c., these islands are less distinguished.

**CEYLON.**—Taking into consideration the almost proverbial riches of this colony, we are scarcely satisfied with their contributions. There is, however, a goodly collection of native products in ores, spices, coffee, gums, hides, &c., and a complete set of Ceylon woods.

The most ingenious articles, to our taste, among the manufactured specimens, are the models of Clerihew's patent process of curing coffee, and for removing the inner and outer skins from the nut, as well as a model of a coffee store and drying platform.

IONIAN ISLANDS.—We had almost forgotten a few articles contributed by Lady Woodford, and others, the most interesting of which is, perhaps, the apron of beautiful work in crochet, showing that what has but recently been introduced into England, has for ages been the common needle-work task of the Ionian peasant-girls. The border is of deep Dresden work, adorned with emblematical figures of lions, cupids, flowers, &c.

MALTA.—This island makes a great show in cotton, especially as applied to the manufacture of sail-cloth. Its lace is also well deserving of notice, and various ornaments in silver filagree-work are of exquisite neatness and delicacy. The works in marble, especially an inlaid table-top, with an Etruscan vase in the centre, and another with the emblem of Carthage in the centre, deserve favourable notice. A representation of the royal arms in marble is remarkable as containing 1,713 inlaid pieces of marble, lapis lazuli, malachite, &c.

We now cross over, and find ourselves in

AFRICA.—Among the numerous native edible productions is some rather uninviting "shea," butter, with which readers of travels are probably more familiar by name than they would desire to be by experience. Some curious but rather comfortable thrones, belonging to the kings of Dahomy, and a strange-looking fetiche, or household god, with eyes composed of looking-glass, shows the native disposition to adopt the productions of civilized life with a view to enhancing illusion, even in the rudest images. A curious basket, made by the natives of Little Popo, also deserves notice.

CANADA.—Canada is strong and complete in almost every department, and gives the most satisfactory evidences of high civilization, united with natural advantages, rarely surpassed. We may first notice a bell, cast in Canadian copper by Molson.

Around the room is arranged a complete collection of Canadian wheat, beans, flour, meal, and other productions appertaining to food, nicely packed in neat oak tubs, with glass apertures at the top. Along the wall to our left is some excellent furniture, carved and covered with great taste, and showing a high progress in the refinement of human life. Messrs. Read and Mealing, of Montreal, are particularly distinguished in this department. We must not, for gallantry's sake, omit a beautiful set of chairs, towards the middle of the room, worked by the ladies of Montreal, as a present to her Majesty; nor an equally ingenious set, worked by the squaws of Larrett.

Mr. R. Lewis, of Melbourne, contributes some beautiful models of bridges; and, on a well-made piano-forte, by Herbert, is some original sacred music by Mr. F. H. Andrews, organist at Montreal, the paper, printing, and engraving of which, all native, does high credit to Canadian progress.

Passing over the rich collection of leather, whips, guns, and harness, near the front of the Canadian area, we must direct our readers'

attention to a splendid fire-engine, by Mr. Perry, of Montreal, to whose courtesy we are indebted for the following interesting particulars:—

Although its whole length is about 24 feet, it is so contrived as to turn within seven, thus allowing of rapid and easy movement round the turnings of streets, &c. It is also fitted with lamps, and with a bell, by which signals of communication can be given to another engine at a considerable distance. But it is in its internal structure that the philosophy of applied force is shown. It possesses power sufficient to propel a larger amount of water, with an equal number of men working, than any other. By a peculiar arrangement of the internal passages, friction is avoided, and the water thrown out more easily. The jerk usually felt in suction is also avoided, and the stream of water rendered *continuous*, an extra air-vessel being provided.

This engine, which is capable of supplying herself with and forming a column of water, from an inch jet, 180 feet high, or 200 horizontal, or two streams 156 feet high, is constructed chiefly of copper, thereby evading the wear and tear to which the ordinary wooden engines are subject. The numerous fires continually taking place in our large metropolis render this an object well worthy of consideration, especially as it produces means of communication by which a fire may be extinguished without the necessity of bringing the engine close up to the building in flames. The admirable organization of the Canadian fire-brigade, in which every member absolutely pays for his *entrée*, is a noble specimen of civilization applied to one of the most serious duties of humanity.

Above this engine is a canoe of white birch bark, 24 feet in length, but yet so light, that it may be carried by three men. Such vessels are of immense value in a country literally channelled out with streams and rapids, in which a heavy vessel would be utterly useless, to say nothing of the impossibility of conveying it across the mainland.

After looking at the splendid sledge, with its snug coverlets of shaggy bear-skins, we must pay some attention—though we wish our limits permitted more—to Mr. W. E. Logan's excellent geological arrangements. Montreal is remarkably rich in iron and other ores; in fact, in the former metal, it challenges a comparison with any in the Exhibition. We may especially notice a mass of iron-ore from Hull, Montreal, taken out of a bed 48 feet in thickness, traced to the extent of one mile. It contains 69 per cent. of pure metallic iron. Another specimen, from a bed 100 feet in thickness, contains 70 per cent. These are followed by a variety of specimens, no less remarkable for their intrinsic richness than for the excellent judgment which has regulated their arrangement. Some pigs of iron, nearly in the right front of this section, are of first-rate quality; and near them is some native gold. One area of land contains gold diffused in various quantities in gravel and sand over an extent of from 3,000 to 4,000 square miles.

The Hon. J. Ferrier contributes some specimens of folded and twisted iron; that is to say, of iron twisted into a coil *when cold*, which is a marvellous proof of extra-high temper, combined with first-rate workmanship. When we consider the ease with which cast iron will snap upon the slightest lateral pressure, it is almost

amusing to see it curled into a graceful roll, with the same correct curves as a well-cut shaving.

Not forgetting the fine specimens of axe iron in the same department, we will pass on to the superb geological specimens of iron, lead, copper, and silver ore, and some delicious cobalt, chrome iron, dromite, magnesite, &c., which are at once a study for the geologist and the artist, contributed by Mr. Badgley, of Montreal. While speaking of materials connected with the fine arts, it is not fair to omit an engraving of the Exhibition, and its drawing on stone, which are satisfactory evidences that a taste for the fine arts, though its opportunities be small, is not wanting in this settlement. There are also some satisfactory specimens of printing, and some hats and bonnets of unexceptionable manufacture. To great smokers, we recommend inspection of some rolls of the native weed, that some people would be glad to form into cigarettes, only that smoking is prohibited.

Opposite the furniture, ranged along the wall, are some gardening implements, some specimens of guano, the much-disputed element of manures, and some splendid polished horns, some of which are attached to the head of the ox, in a beautiful state of preservation.

NOVA SCOTIA fills a slip running along the back of the Canadian compartment. Its beaver leather, admirably prepared, cheeses, and furs, deserve a passing word. The skins of the wild cat, minx, and hare, are in superb condition, and those of the much-famed "coon" and the black fox, are really magnificent for their glossy richness. At the left side is a piano, by Phillips, of Halifax, Nova Scotia, elegantly got up, and some pretty bird's-eye maple chairs. These, and some beautifully-stuffed birds, among which we may mention a superb black raven, pecking at an egg, prove that Nova Scotia is little behind her parent state in furnishing the refinements, as well as the exigencies of life.

In the farthest opposite corner we must notice some articles in wool, and more particularly a representation of the christening of the Prince of Wales. A pair of boots, made of brown grained leather, by Mr. Gabriel, excite envy. Getting wet while cased in such greaves seems a fiction.

To the collectors of field plants, and those who are fond of arranging a *hortus siccus* of their own, we recommend the beautiful arrangements of wild flowers on paper. It is gratifying to find such harmless and graceful pursuits so far diffused over the globe.

The specimens of steel, from the Acadian Iron Mining Association, and the cutlery, are highly satisfactory.

NEW ZEALAND.—A model, surpassed by few in this vast collection, and representing War Pah, with minute leaden figures in various attitudes of defence, gives a most amusing illustration of the skirmishing warfare of some of our colonies. The peculiar arrangements of the interior, and the elaborate and ingenious system of palisading, almost require the experience of a military man to appreciate. Not far from it, after some excellent specimens of cordage tichore, furniture woods, &c., is a model of a canoe, sent by natives to Captain Fitz Roy, R.N. Among the natural productions, some bark, used for tanning, must not be forgotten.

BERMUDA, which occupies a small block near the middle of the compartment, chiefly deserves mention for a book chessboard, of three different shades of cedar, by Hamilton, and some pretty straw plaiting.

NEW ZEALAND continued.—Opposite the former articles, is a stand of native woods and an inlaid table-top, with radiating compartments of various woods. In a glass case is a hammock, most fantastically decorated with feathers; in fact, looking almost like a fancy bird scooped out to form a cradle. Passing along the front, towards the Canadian department, some stuffed owls in a case claim attention, more particularly from the charming variety of mosses, of almost every conceivable hue, on which they stand. Opposite them is a sectional model of a ship, by Bland, of Sydney, ingeniously contrived with a view to checking spontaneous combustion, and, behind it, some articles wonderfully carved in palm-leaf. The pagoda, and a beautiful basket, show all the minute neatness of exquisite card models, accompanied by still greater delicacy, which is heightened by the pale straw-colour of the material. To some of our youthful readers, the specimens of sugar, obtained direct from the pure cane, not re-boiled or refined, will not be uninteresting.

Not far off are some tolerable views in Guiana, and a table-top, composed of 84 native-grown woods. A curious fish-pot, in other words a rushwoven contrivance for getting fish into a most uncomfortable and not-to-be-got-out-of labyrinth, will amuse the Isaak Waltons of the present day.

BARBADOES sends some wax-flowers, far inferior, however, to our own efforts in the same elegant art.

THE BAHAMAS.—From these islands there are exhibited two most elegant pieces of shell-work; the one, by the Misses Greig, of Nassau, is a crown on a sumptuous cushion; and never before was such a beautiful collection of shells of various hues and devices seen; the other represents a most beautiful vase, made up entirely of white shells, surmounted by a wreath, with the rose, shamrock, and thistle, and adorned with the Prince of Wales's feathers, Maltese crosses, numerous flowers, rye, hops, &c. The fair contributors were six months incessantly engaged in the manufacture of these two elaborate works. Miss Nichols, of the same place, who assisted in the arrangement, deserves unqualified commendation.

On our right hand, South Australia exhibits a fine collection of specimens from the Burra Burra Copper mine, consisting of blocks of the richest red oxides, blue carbonates, &c., from the various shafts of different depths. A block of red oxide, studded with native copper, and presenting also malachite and blue and green crystals. Several specimens of red oxide, from a lode recently discovered of very high produce, estimated at 70 per cent. A block of blue carbonate, named the Punch Bowl, having a diameter of 2 feet 6 inches by 1 foot 9, and weighing between 2 and 3 cwt., is a mass over which a geologist might gloat most pardonably.

VAN DIEMEN'S LAND, like Canada, is most satisfactorily abundant in its ocular evidences of civilization. Their cloths, preserved meats,

(beef-steak, to wit!) enamelled hides, and excellent furniture, almost equalling our own for substantial make and taste of execution, are triumphant proofs of the progress of knowledge and industry over brute force and self-contented unintellectuality.

After pointing to the rich square rug of skins, which hangs on the wall facing us, we must bid our readers halt, and admire the superb model of a bridge, portions of it moveable, over the Derwent, between Hobart Town and Launceston. This piece of modelling is due to the ingenuity of Messrs. Blackburn and Thomas, and it is hardly surpassed, except by the celebrated model of the suspension bridge over the Dnieper.

TRINIDAD.—We must notice a fine square mass of Cedrela wood, contributed by Mr. T. C. Burnett, and a beautiful model of an Indian cottage, fully equipped with the implements for fishing, cookery, and the chase. The hammocks suspended to the roof, and the figures, all busy, are most diverting illustrations, and far more life-like than the conventional prints from which our knowledge of these places has been too exclusively derived. Opposite to it is a similar model from British Guiana; but the figures are ruder and more doll-like.

We shall now continue our course eastward down the centre of the—

FOREIGN NAVE.—The first objects that we notice are the portraits of her Majesty and Prince Albert, painted on Sèvres china, the size of life (half-length), by A. Ducluzeau, from the original portraits by F. Winterhalter. They are extremely life-like, and attract many visitors.

The Koh-i-Noor, or "Mountain of Light," exhibited by her Majesty, would appear to be one of the greatest curiosities of the Exhibition, if we may judge from the numbers congregated around it during the day. Its shape is an irregular oval; it measures  $1\frac{1}{2}$  inches in length by 1 inch across. It is irregularly cut, symmetry being apparently sacrificed to maintaining the full size and weight of the gem. It is of the very purest water, without flaw, and weighs 186 1-16 carats. Two smaller diamonds, of enormous value in themselves, are placed on either side; one weighs 34 1-6 carats, and the other 19 $\frac{1}{4}$  carats. The history of "The Mountain of Light" dates from Arungezebe, or as some say, Tamerlane, and it has, so long as any record of it is known, invariably followed the line of conquest in India. In the time of Runjeet Singh its value was estimated at three millions sterling, and those in this country who are best acquainted with the value of gems fix the value at £1,500,000. Mr. Chubb, who appears to have a wondrous talent for locking up things in general, has displayed his ability in a massive gilt iron cage to enclose this "monster diamond," which, by some ingenious machinery within, is raised upon an elevated platform during the day, and lowered into an impenetrable iron safe at night.

Next in order is the shield presented by the King of Prussia to his royal highness the Prince of Wales, on the occasion of his majesty acting as sponsor at the baptism of the infant prince. The pictorial embellishments of the shield (the general plan of which was given by the king himself) were designed by Dr. Peter Von Cornelius and the ornaments by Counsellor Stüller. This shield, which is embel-



lished with many scriptural illustrations, has been denominated "The Buckler of Faith."

A colossal statue to the Marquis of Bute next claims our attention, when we pass to a vast earthen jar, from Don M. de Ysasi, of Toledo. The only compliment we can pay it is to express a wish that the great "Tun of Heidelberg" had been sent to the Exhibition, to keep it company.

As we pass on, at the two sides of a superb vase of oriental alabaster, are two charming statues of Venus and Flora, by the late R. Wyatt. Their delicate chastity of figure, and the beauty of their execution, give them a place among the "prettiest" objects in the whole place.

The colossal statue of Queen Victoria, cast in zinc, at the works of the Montagne Zinc Mining Company, of Paris, is a remarkable work; but, in our opinion, destitute of the sharpness which the effect of statuary requires.

After looking at a neat bronze fountain, by André Val of d'Osne, Du Croquet, of Paris, contributes an organ; compass from CC, both on great organ and swell, with powerful pedals to CCC. It has many beautiful stops, one of them analogous to the reed stop, known as *cor-Anglaise*, in the harmoniums. The pedals give great power to this instrument, the Bourdon pipes speaking with great clearness down to the lowest note, and the *bombarde*, a trumpet stop of a refined quality, and of equal compass, combining with the great organ in producing a splendid volume of tone. To say the truth, however, the building, as we shall hereafter have occasion to notice, is by no means favourable to the effect of musical instruments.

Behind the organ is a beautiful and spirited cast, and at its sides, two groups in marble, the one representing Cosmo de Medici and Politian, the other, Paulo at the feet of Francesca de Rimini. A colossal group, in plaster, by Duseigneur, representing St. Michael and the Dragon, also deserves notice. We must not omit a fine group of the family of Cain, a fine conception and embodiment of remorse. The principal figure represents the sturdy frame of the "tiller of the ground," but it is scarcely vigorous enough for that of the fugitive from Eden. A companion group, representing a mother surrounded by her sickly infants, is equally remarkable for the admirable modelling skill which veils the painful nature of the subject. In speaking of the same artist, we must not forget his large group of "the Archangel Michael overthrowing Satan." This enlightened artist has wisely merged the habitual mode of representing the devilish encounter as a mere feat of physical strength in the assertion of divine superiority. The sculptor has made the demon crouch beneath the outstretched left arm of the angel, rather than succumbing under the slender but flaming sword of gold grasped in his right. The headlong form of Satan, with the serpent, not, as usual, substituted for nether limbs, but disentangling its coils from between them, is executed in the manner of mediæval carvers of monsters; but the accentuation of the anatomical forms affords a striking contrast with the placid features and demeanour of the celestial messenger, whose *cinque-cento* style of armour, however, would rather become the Maid of Orleans than the executioner of Heaven.

A cast of the colossal statue of Godfrey of Bouillon, by M. Simonis, the original of which, in bronze, was inaugurated at Brussels, in 1848. Far and near is distinguished the standard held up by the

massive broad-chested and bearded crusader, who perfectly answers to all preconceived notions of chivalry, and renders it difficult to conceive how the infidels, be their scimitars ever so broad, could resist the onslaught of such stalwart antagonists. The uplifted head of the hero is expressive of religious ardour, and that of his war-horse (which is, however, somewhat heavy in proportions), of coming havoc; as a specimen of sculptural detail, admissible in the grandiose style, the elaboration of the knight's suit of *cap-à-pie* mail deserves notice, no less from the fact that in selecting a subject from the period of the eleventh century, the sculptor seems, perhaps unconsciously, to have adopted that mid-style in which classical is ready to yield to Gothic forms.

Near this statue are four charming marble figures of boys, representing an infant boy asleep, the same awaking, a boy playing with a punch, and another lamenting over a broken drum. The latter figure is perfection, and the rueful misery of the reckless juvenile exquisitely portrayed. We have often heard of statues weeping, but we never believed the fact till we saw this exquisite effort of comic art.

The "Torments of Cain," by L. Jehotte, is a cast of considerable merit. The expression given to the forehead deserves great commendation, which may also be fairly bestowed on the Mazeppa group, in marble, by G. Pierotti, of Milan.

To Raffaele Monti, of the same city, high praise is due for a marble representation of two girls,—one angling, and the other taking up the end of the line, with the unfortunate fish just captured. Exquisite beauty and softness of countenance, joined with most pleasingly-intellectual animation of expression, attests the master-hand of the sculptor. It is not a great work—it is simply charming.

Under a canopy, well calculated to set off its splendid material, is the "Wounded Achilles," by Innocenzo Fraccaroli, of Verona. The artist has happily seized the moment when the destined shaft has struck the only vulnerable part of the hero, his left heel. The expression of the face, and the sudden start, shows horror, not pain. He who received but one wound, knew that it should be his last.

Just opposite, under another canopied recess, is a painted window, representing "Dante and some of his Ideas," by G. Bertini, of Milan. It is a sort of apotheosis of the poet, surrounded by the imagery which his poems have immortalized. Its scientific composition, its mellow colouring, and even the Romanesque ornamentation of the compartments, announce the closest relationship between the artist and the handicraftsman. The shadows are over dense, and threaten completely to inveigle the light, being deficient in the more gentle graduation of tone found elsewhere. Nevertheless, in spite of these blemishes, there is much to command admiration in this lancet window. Dante is represented after the likeness bequeathed to us by his friend Giotto, which has been but lately discovered in Florence. The reflected light in the figure of Beatrice is very beautiful.

We now come to the magnificent group in zinc, bronzed, representing an Amazon on Horseback attacked by a Tiger, designed by Prof. A. Kiss. Words of praise are almost exhausted in vain upon this beautiful work of natural-art—for it is more than art. So

strikingly original is the form of the Amazon, so certain her position, and so spirited is her action in hurling her javelin at the tiger clinging with deadly grasp to the flanks of the horse she strides, that it is not easy to recollect anything to be compared to it in the whole range of modern sculpture. The beautiful forms of the Amazon are amply developed, and are almost unencumbered with drapery. The Phrygian cap which surmounts her Medusa-like head, the slender tunic, scarce held by a narrow girdle, and the spurs fixed to her anklets, impart grace to the figure without impairing the appearance of physical superiority. The terrible spring of the tiger, and consequent shock to the horse, are depicted with such life-like energy that one almost expects the blow which is to terminate the struggle; and in the undaunted eye of the Amazon we almost read the certainty of the stroke which is to pierce the brain of the monster and hurl it lifeless to the ground. It appears that there anciently existed a bronze group of this very subject, ascribed to the hand of Phidias, and which was familiarly known as the "Eucnemos," from the extreme beauty of the limbs. Kiss may claim the same title for his Amazon, which is a reproduction of the original bronze in front of the Berlin Museum, and executed by the electrotyping process. In a word, the "Amazon" is *the* object of the Exhibition. About this, doubts seem at rest.

A raised globe, from Russia, similar to the raised charts we have elsewhere noticed, well deserves notice. Next to it is a bronze group of a Boy with a Swan, the property of the King of Prussia. Soon after a colossal lion, 15 feet long and 9 feet high, is easily recognized from its size.

Among the many sculptures, in which Prussia is so rich, we may mention a bronze statue of Polyhymnia, by Kessler. It is a copy of the antique statue in the Royal Museum at Berlin.

At the two sides of a large bell are casts of Arabian horses, taken from the life. These beautiful animals, in the possession of the King of Wurtemberg, are represented in most spirited attitudes, eager to run away, and with difficulty held in. The faces, in particular, of these steeds, especially in the development of the mouth and nostrils, are bold and artistic, reminding us of the steed of "the Amazon."

Those who have read of the Falls of Niagara, and who have seen the numberless views of those tremendous cascades, will feel no small interest in a model of them, with the dense forests adjacent, by Mr. Catlin, the well-known exhibitor. After surveying the bird's-eye view presented by this charming little model, we must stoop down at the side, when we recognize the falls we have so often seen depicted. The colouring is admirable, and the manner in which the trees are imitated is remarkable.

A block of zinc ore from New Jersey, weighing 16,400 lbs., is a curious introduction to one of the most exquisite objects in the museum—the Greek slave. The plaintive calmness of the downcast figure, the faultless symmetry of the limbs, and the easy repose of the position, make this statue the centre of a bevy of admiring spectators. The pedestal is so arranged that the whole figure can be turned round, thereby displaying every portion of this *chef-d'œuvre*. We recommend it to the artist, the statuary, and, as the *Athenæum* would say, to the lover of the beautiful.

UNITED STATES.—We have no wish to depreciate the efforts of our Transatlantic brethren, but, did we not know them to be capable of great things, we should never have learnt it here.

A full-sized model of Rider's patent improved suspension truss bridge, near the end, is surrounded by a trophy of articles in vulcanized India-rubber. Large pontoons, buoys, life-boats, and other articles, form this mass of elasticity, although but a few of the articles in this material which we shall have occasion to notice. At the left side is a dial of the seasons, illustrating the declination of the sun at all seasons of the year, and the coincident effects of light and heat on animal and vegetable life. These are most ingeniously portrayed in a series of hieroglyphics of animals, men, ships, &c., in various situations, and under various shades of the atmosphere. It is the invention of Mr. Thomas Fisher, of Philadelphia. Behind the bridge is a massive union bell, by Moories Stirling. Turning to the right from the London entrance are some carriages, the elegance of which does credit to American taste. We may particularly notice the "Prince Albert Wagen" (a name of obviously German origin): it is beautifully light, and has a shifting top. It is the contribution of Messrs. Groot and Potts, Massachusetts. Opposite is a most elegant carriage, the lining of which, a pale grey fawn satin damask, with handles and fittings of mother-of-pearl, would satisfy the most extravagant votary of fashion and ease combined.

It was with no small pleasure that we recognized our old friends, the Missionary Societies' maps, on the walls of this department. The American biblical critics have travelled largely in the East, and have done much for the cause of sacred geography. Knowing how great have been their efforts in this respect, we gladly welcome these symbols of their exertions, but we at the same time must express our regret at seeing this department so insufficiently represented.

Far more complete is the collection of newspapers and journals. We have a pretty reasonable number, daily and weekly, in England; but Jonathan beats us hollow. The "commercial sheets" alone are absolute leviathans of paper, and the advertisements in some of them more than amusing. Puffing is quite as complete, but less refined in its style and eloquence than in England. But a better lesson to be learnt from the Yankees is the cheapness of their journals. Some of the American minor journals, compared with the loathsome rubbish vended by the Reynolds school in our own country, are well worth "making a note of." The decorations on the walls are of London manufacture, the work of Messrs. Williams and Co.

Near the middle of this compartment, a charming little model of a carriage, with a sort of palanquin top, to hold four, is one of the prettiest things of the kind in the Exhibition. Mr. Fisher's diagrams for simplifying mathematics, also deserve notice, although they can only be appreciated by persons of a class to which we do not ourselves belong.

No. 73. A reaping-machine, is drawn by four horses when in use. The four sail-like surfaces put in action by the wheel at the side, press the wheat near to the knife which runs along the ground. This is furnished with numberless small flat teeth, exceedingly sharp, which are parted at intervals by wedge-like protrusions, which, with the external pressure from the large wheel-cogs, separate the wheat into small parcels, so as to make the cutting more decisive. The

cogs also serve to push the cut wheat upon a flat platform behind the knife, from which the binders disengage it. So quick is the action of this machine, that it keeps about five binders actively employed in collecting the wheat cut down, and it will reap from twenty to twenty-five acres in a single day. A mowing-machine, near it, is equally deserving of notice, the knife being formed on a similar principle.

Along the side of the room are some monstrous oars, sweeps, and sculls, of which the manufacturer, Mr. Ezebiel Page, of New York and Boston, advertises upwards of 1,000,000 feet for sale. His manufactory employs more than two hundred men; and, by the application of some machinery of his own invention, he is enabled to manufacture more than 8,000 feet per diem, and thereby combining rapidity of production with cheapness of price. When we are told that these colossal implements are "commonly in use," it gives us some faint notion of the inland navigation of the United States.

It is needless to go into details respecting the various implements of husbandry exhibited in this room. As specimens, they are neither on a par with those sent by other countries nor with ourselves. We may except a pretty model of a plough, under a small glass cupola, made in a few "leisure hours" by Robert Thompson, and designed as a tribute of respect for H. R. H. Prince Albert.

No. 480. A model of an improved railway scotch, and No. 512, a model of patent paint-mills, deserve notice, as also a freezing machine, for economizing ice. To artists, we recommend some attention to the coffee-mill-like contrivance for grinding colours, which may be seen at work at Farmer's, 28, Aldgate. On the same table is a neat model of a latticed entrance to a garden or park, with an ingenious contrivance, which, by means of a rope hanging down, to be caught by the driver, opens the gate without compelling him to dismount from his seat, at the same time giving due notice of the arrival by ringing the bell. Such a contrivance would be a blessing to some of our plethoric coachmen in high life.

Just opposite Ericsson's caloric engine, which we must leave to those interested in machinery to understand, is a set of punching-machines, which attract the observation of the spectator; they are furnished with knuckle joints, the long levers of which pass through a space of many feet, not moving over more than half an inch, they concentrate a large amount of power. Some safes of professedly equal security to those of Chubb, and several other iron works, both cast and wrought, for cognate purposes, are placed in this department; and though of little interest in themselves, are undoubted attestations that all conveniences of this kind are manufactured with equal skill on the other side of the Atlantic as here.

A rather pretty contrivance by T. Emerson (not the author of "Representative Men,") for the ventilation of a ship. Two little curtains of paper, inclosed in a glass box, supposed to be the ship, prove by their motion that the stream of air admitted at one ventilator passes out by the other, thereby insuring a constant current of pure air.

At the other side, as we walk round this compartment, some models of railway arrangements, and some rough but accurate drawings of steam machinery as applied to ploughing and to railways, by B. P. Wilmot, claim a passing observation. As we approach the

nave, there are a variety of toys in India-rubber, and a cabinet, looking not unlike rosewood, veneered with the same material. As far as proving the universal applicability of India-rubber, it is well enough, but its appearance is inferior to that of some ordinary painted cabinets. We must not, however, always expect elegance and ingenuity to work together.

In the nave is a really handsome water-vase in brick-clay, but varnished like a looking-glass. It is a bold, capital piece of work, in plain, useful material, manufactured by Messrs. Salt and Mears, Cincinnati. In a case in front is a flag-staff, cut for Lucius Campbell Duncan, of New Orleans, at Mount Vernon, near the grave of Washington, March 21, 1851, by Mr. President Fillmore, who ordered it to be presented to him by Winifred Scott, General-in-Chief of the United States army. In the same case are several objects worthy of inspection. We may specify Pecare and Smith's self-cocking and repeating pistols, a most beautiful case of stuffed birds, and Ashmead and Hurlburt's *machine-made* gold foil. This is especially recommended for its great softness when under pressure, its capability of becoming solid when pressed into a cavity, and the evenness of its fibre. Not far off is another amusing specimen of the application of India-rubber, in some flutes made of this material. We ourselves, however, have some doubts whether any material can compensate for the peculiar woody sound which forms the chief beauty, especially in the deeper notes of this instrument.

After looking at the collection of scientific instruments and pistols, the "wounded" Indian, by Stephenson, the design of which is a dying Indian chief. The figure, the size of life, represents a noble specimen of the North-American Indian, who has received a death-wound in his side, and has fallen upon his right knee, with his left leg projected forward, and resting on the foot. The head is bowed, and the agonies of death are expressively stamped upon the countenance. The left arm has fallen, almost powerless, the hand resting upon the ground, and just relaxing its grasp of the arrow, which it has withdrawn from the deadly wound, while the remaining strength of the right arm is employed in preventing the reluctant fall of the proud but stricken chief. The form and features are perfectly characteristic, and the whole presents a fine idea of the North-American Indian. It is interesting as a work of native art, carved in native marble. We cannot, however, bestow high praise upon it in an æsthetic point of view. The fine arts are, comparatively speaking, in an infant state in America.

Crossing over, and commencing on our left, a handsome red-cedar bedstead, by Dunton, of Philadelphia, is worthy of notice, although the ceiling of it is defaced with a strangely shabby hanging, in plaits. We must not forget a canoe, cut from the solid wood, and, opposite to it, a handsome carriage and sledge. American clocks, of which there are plenty, are no novelty among us; but the furniture in this room, consisting of some elegant American chairs, from Mr. Toph, of New York, and some handsome piano-fortes, deserve attention. Among these latter, there is an ingenious contrivance by which a violin is attached to the back of a square piano-forte, and, by a peculiar arrangement of bows, the keys are enabled to play the two instruments at once. The tones so drawn are clear and full, but incapable of the sharpness of effect, and the exquisite *crescendo*,

which is the great charm of the violin. We admire the cleverness and patience of the design, but have little hopes of its practicable utility. In fact, bowed and keyed instruments have too little in common to admit of such union.

Considerable space is occupied by the daguerreotypes of Messrs. Meade and Lawrence. This gallery of daguerreotypes is chiefly curious on account of its portraiture of the most illustrious men of the United States. Calhoun and others are here in all their reality of aspect; and the spectator acquires an idea of the lineaments of many an individual, distinguished for his talents and influence, for his power as an orator or his wisdom as a legislator, which, it is clear, any of the ordinary modes of limning fail to supply. Some of the talbotypes are bold and effective; and in this department of the photogenic art the Americans may be said to have surpassed us. There is a large assortment of popular optical instruments, including some clever hyalotypes, or positive pictures on glass plates, adapted for magic-lantern slides. The lithographs, which are exhibited in tolerable numbers, do not evince any great proficiency in this branch of artistic manipulation. The drawing is, in most cases, poor, mechanical, and spiritless, and the lithographic texture coarse and woolly. Several of the portraits which we observe in the gallery of daguerreotypes are reproduced on stone; but, for the reasons we have stated, demand but little admiration.

The self-acting reclining chair of Rogers, Philadelphia, is one of those "too luxurious" annoyances of the poet, upon which ingenuity has exhausted itself of late years. There is no denying the excellence and neat finish of the present specimens.

A more interesting series of objects, but not American, is furnished by Mr. Hartley's instructive illustrations of various manufactures in glass, and the processes of each. Passing under a small entrance covered in with a ridge-and-furrow flat roof, exhibited sectionally, in the extreme avenue eastward, we find some specimens of patent rough glass,  $\frac{1}{2}$  of an inch in thickness, adapted for roofing conservatories, &c. Near to it is a pretty model of a greenhouse, by the same manufacturer, similar to the one erected in Chiswick Gardens. Next follow a series of illustrations of the manufacture of crown glass, showing it in its different stages of blowing, cooling, &c. Farther on is a transparent model of a glass-house, 7 feet in diameter and 13 feet high, together with some capital specimens of rich ruby and other coloured glass.

We must not omit the models in this department, especially one of a merchant-vessel, one of the sides of which is ingeniously arranged so as to open and discover a complete, not sectional, view of the interior. It is beautifully built, and is the design and workmanship of George Headley, a working shipwright at Sunderland. Equally neat and clever is the model of a packet-ship, of similar structure, by Thomas Hardy, of the same place. Indeed, Sunderland appears to be rich in workmen of practical ingenuity, for we also find, close at hand, a patent steering apparatus, by J. Hughes; a model of a pilot coble, by Hodgson, a peculiar kind of vessel, which is easily manned by four or six hands, and will go to sea better than many stronger ships in the most trying weather. Joseph Dunn, from the same place, contributes a model of a railway, exhibiting an arrangement for reversing engines and trains, obviating the necessity of

turn-tables, and, if practicable in its full size, well deserving of attention, as much time is lost, and inconvenience occasioned, by the present system.

Mr. John Hanley, of New York, exhibits a model of an exceedingly ingenious contrivance, invented by himself, and called a "Catcher," the object of which is to remove accidental obstructions from lines of railway in such a manner that trains shall receive less injury from collision than would otherwise be the case. The mode proposed is exceedingly simple, and reflects great credit on the mechanical and inventive skill of Mr. Hanley. It consists in adapting a conical drum to the fore part of the engine, with its axis in an oblique position, so that the hypothenuse, or slant-side of the right-angled triangle, by the revolution of which it may be conceived to be generated, shall in its lowest position be level, and slightly above the surface of the rails. The apex of the cone points outwards, and reaches a little beyond the rail. Motion is communicated to the drum by means of an endless strap playing round a pulley keyed on its axle, and also round another pulley on the axle of the front engine-wheels. The revolution of the drum gives it all the properties of a screw in rapid motion. The consequence is, that when the revolving drum comes in contact with an obstacle, its rapid and forcible motion actually screws it off the line, and the damage is greatly lessened by the elasticity and motion of the machinery. We understand that experiments with this machine have been tried in America on a large scale, and with a success which promises that the most useful results in steam locomotive conveyance are likely to accrue from its adoption. Mr. Hanley also exhibits a model key, constructed on a principle for which he has obtained letters patent in America. The peculiarity of this instrument consists mostly in its being furnished with a small revolving metallic end. The object of the invention is to give to housekeepers all the safety against lock-picking which they can derive from having the key inserted in the hole, and there left, to prevent the insertion of any burglar's implement, of which it is well known there are a great variety adapted to the different descriptions of locks. There is only one way in which the security thus provided can be lessened or destroyed; and that is, by the burglar's seizing with a forceps the small end of the key, which usually projects beyond the bearing-plate of the lock, and either unlocking the door by a forcible motion, or else turning the key through a space sufficient to obtain access to the essential works of the locks. Either object is here completely frustrated by the simple variation in the key which we have mentioned; since the only effect which the burglar can produce on it is to turn round the revolving end. This invention, like the first, is simple, ingenious, and worthy of attention.

A glass-house pot, weighing one ton empty, and two tons when filled, is from the celebrated glass-foundry to which we owe the other interesting specimens of this manufacture.

The ornaments on the walls, which consist of excellent imitations of wood and marble on paper, are chiefly English, being from Arthur's, in Sackville-street. Although they are first-rate in their way, we can give less qualified praise to the similar imitations, on wood, in another part, already mentioned.



M. Moussard, who has changed his residence from the Champs Elysées to the realms of Yankee Doodle, furnishes some beautifully-decorated carriages. But the best things here are some raised pictures of horses, opposite the carriages, of various breed, and variously caparisoned, according to their use and purpose. The excellent and spirited drawing of the animal is heightened by the solidity which a raised picture gives, and the colouring is equally well adapted to make them attractive to the purchaser of jockey prints. We have the more pleasure in noticing them, as we find them placed in a situation where they might escape observation.

In the middle of the room, among a miscellaneous collection of provender of all sorts, but much more entertaining to discuss edibly than literally, is a neat cabinet, with shelves on both sides, sent by the Maryland Committee. It consists of native natural and industrial produce, all arranged in parallelograms of the size of a Maryland brick. Some bricks form the bases of the collection; others are formed by tin boxes filled with chemical, geological, and other productions, even to cotton and printing-types, all arranged in the brick-like form and size. As a whimsical piece of uniformity, it is rather amusing.

More worthy of attention is Dr. Lewis's geological collection of ores, fossils, &c., and a *hortus siccus*. Among other productions of this room, the zinc tints may be specified.

Returning back by Brady's Daguerreotypes, to our right are a couple of grand pianos, from A A A to A in alto, which, though not equal to those of Erard or Broadwood, do much credit to Transatlantic manufacture. In the middle of the room, near the violino piano, which we have already described, is a curious circular office-table, the centre of which revolves, so as to get at any of the numerous "pigeon-holes" it contains. This convenient and business-like *escritoire* is from the South Carolina Railroad Company's office. Before we quit the United States, a word of praise is due to the Globe Print-works, for their pretty specimens.

RUSSIA occupies a moderate space, but has many objects worthy of notice, particularly a case of richly-embroidered military caps, boots, &c. At the side are rich shawls, handkerchiefs, and stuffs. It also contributes good specimens of raw silk, rough wools, flax, hemp, cordage of different kinds, &c. But by far the most interesting object in the Russian department is the trophy in the centre of the room, consisting of various grains, grasses, and other field produce, dried, and arranged in bundles, so as to form a fantastic pyramidal edifice of much elegance. The great variety of the grains attests the riches of Russia in this respect.

To the left of this trophy is a good collection of specimens of sheet and bar iron, copper, bullets of various sizes, tools.

Russia, on the other side of the nave, is unfortunately as yet unfinished, and we can only notice two splendid gilt candelabra, standing outside, by Krambigel, of Moscow.

SWEDEN AND NORWAY.—The contributions from Sweden and Norway consist chiefly, as might be expected, of iron, of which twenty fine specimens have been sent by one proprietor, including

part of the rock in which the mine is situate, the leading stone, the mineral intermixed with the ore, the several ores, and their analysis, showing their constituents, the pig iron, the scoria, the blooms, and the bars. In this series are exhibited all the conditions of excellence which have long rendered the Swedish iron and steel so much celebrated. The magnetic iron and ore are found there in abundance, an ore which in England has only been found in two places—one near Penzance in Cornwall, and the other on Dartmoor, in Devonshire.

This ore, and the use of charcoal and wood in the process of smelting, are the chief sources of the excellence of the Swedish iron. Specimens of ore have also been sent from the celebrated Dannemora mines, considered to afford the best Swedish iron.

The mining region for iron in Sweden occupies the whole breadth of the country, from the frontier of Norway to the Gulf of Bothnia, its northern boundary being marked by a line drawn from Glommen through Lake Siljan to Soderham, and its southern boundary lying along the 59th parallel of latitude. The area of this district is about 16,000 square miles, and its annual produce in bar iron amounts to about seventy thousand tons. A marble statue of a shepherd's boy, executed at Rome by M. Moline, a Swedish sculptor, possesses considerable merit.

These countries also exhibit cotton and woollen goods, of coarse but substantial texture, produced in the hand-looms of the peasantry; and Swedish silks and satins, *moire façonnée*, and a portrait of King Oscar, woven in silk by the Jacquard loom, are among the textile fabrics exhibited. There are also specimens of cobalt and nickel from the Norwegian mines. The whole of this little collection is extremely interesting.

DENMARK.—Two pianofortes, by Hornung, placed outside, deserve the attention of musical persons. We were also much pleased with a splendid rug, composed of various native firs, of the richest quality and finest preparation. Four foxes, stuffed, are let into the corners, one of them holding a bird in his mouth.

In the centre is a beautiful writing-table, with a comfortable library chair. The table is extremely light and tasteful in its construction. Along the left side are some exquisite porcelain medallions, representing mythological and classical groups. The marble-like purity of the material is surpassed by the extreme delicacy, grace, and softness of the execution, and we recommend the most careful perusal of this really charming collection, only regretting it is not more copious.

There are some other contributions from the royal porcelain manufactory at Copenhagen, which are very delicately executed. Much of the business of this establishment of late years has been devoted to producing reduced copies of the works of the celebrated sculptor Thorwaldsen, in biscuit china, and most of them are here. Their imitations of Etruscan vases, modelled after the antique, carry us at once back to the Etruscan room at the British Museum; so truthful is the resemblance both in material and execution. They contrast curiously with the coarse black earthenware pots used by the peasantry of Jutland. In the miscellaneous department there are spe-

cimens of metal manufacture, the shapes of many of the articles of domestic use being somewhat quaint and primitive; paper, stearine, leather in the process of manufacture, and converted into boots and shoes.

A beautiful ivory jewel-casket, covered on the sides with admirable bas-reliefs, by Klingsey, of Copenhagen, deserves especial notice. The representation on the top, of a boy feeding a swan, is repeated in other works of *vertu* around the room.

After looking at some pretty cameos, we are struck by the beautiful group of a hunter who has robbed a panther of her cub, by Jerickau, of Copenhagen. The countenance of the creature, robbed of her young, is full of mute agony. It is not a mere brute ferocity, but there is a mixture of pathetic expostulation in the countenance, which does the highest credit to the sculptor. We unhesitatingly recommend this as one of the most "telling" groups in the sculpture department. While we are speaking of sculpture, we must do justice to M. Bissen, whose Cupid sharpening his arrows, though not new in idea, is graceful in execution. His Orestes is also fine.

Langgard exhibits a model of a machine for the remedy of spinal curvature, which must put Messrs. England upon their mettle.

A word respecting the philosophic, mathematical, and other instruments in this room. Denmark has always been famous for ingenuity in inventing scientific instruments, and many of the most useful discoveries connected with the apparatus of various sciences are due to the universities and mechanists of this country. What we see here, scarcely, in our opinion, comes up to what we might have expected, although there are many things by no means devoid of interest. We may especially notice an astronomical clock, which goes for a month, and has an escapement that gives an impulse every ten seconds, by Funch; some chronometers, with the same arrangement, by Jurgensen and Sons. In the centre of the room is a most elaborate machine for composing and re-sorting the types after printing. It is a beautiful piece of workmanship, but is much too elaborate to allow of description. The last Denmark curiosity we shall mention is Naylor's set of files. They are cut by Mr. J. W. Naylor, of Copenhagen, the son of an Englishman, who emigrated to that city many years ago. There is a four-square equal rubber, weighing ten pounds, cut as a smooth file, on the two opposite sides of which are represented, in the cutting, the four principal branches of the trade—as the forgers, the grinders, the cutters, and the hardeners; and in the middle of the same sides are the Danish coat of arms, and that of the city of Copenhagen. On the third side is the name of the city, cut in large letters, in an ornamental ground; on the fourth is a full view of Copenhagen. The tang consists of four serpents twisted together, of which two are cut out as files, and two as rasps. The tang unscrews, and from the body is taken out a round equalling-file, ten inches long, on which is cut the maker's name, and the year 1851, twined round from the point to the tang, in a double cut ground. A little knob is then opened in the point-end of the round file, and out tumble half-a-dozen different little files and rasps; then the tang unscrews, and a 5-inch taper three-square file comes out, cut with ornaments on the sides. This unscrews, and a little four-square file comes out, three inches long, double cut, in a Vandyke style. This

little four-square file unscrews, and a round file comes out, one inch and a quarter long, which would almost float on the surface of the water. This also unscrews, and a file is taken from the inside of it.

Behind Sweden and Denmark, which extend but a little distance, runs the first department of the Zollverein. Before we introduce our readers to the wondrous collection of objects which fill the numerous rooms in this most interesting department of the Exhibition, we must remind them of the many reasons which render the advancement of German art and manufacture a subject of domestic interest to ourselves. The many obligations we are under to their states for advancement in classical and scientific literature, the better information on the matters of the natural world, due to the persevering exertions and enlightened and well-arranged research of the German naturalists, philologists, and travellers; the numberless improvements of the most common details of every-day life,—the application of philosophical principles to what was once considered only matter of fact, and the consequent elevation of the human mind to its most proper study,—above all, our connection with Germany through the throne, and our meeting here with Germany through the well-applied perseverance of the Prince Consort, whose name is our strongest bond of mutual union,—all these circumstances render the collection now before us little else than a national museum. We must admire the ability and honour the spirit in which our advances have been met and our hopes and expectations answered, by so systematic an arrangement, and so rich a selection of the arts, manufactures, works, and ingenuity of the Zollverein, a number of German cities, principalities, and free towns, leagued together for commercial and revenue purposes. Saxony and Baden, Brunswick and Berlin, Dresden, Magdeburg, Thuringia, Wurtemberg, Stuttgard, and a long line of other well-known German names, assemble here under the same roof and within the same compartments, in generous emulation, each contributing its quota of novel or ingenious productions to swell the triumph of the great exposition of the world's industry.

The first room we enter contains articles in leather of every form and style, together with a handsome collection of whips. Through it, in the passage running under the inner gallery, we find a collection of stationery, embracing every requisite for writing, from the simple sheet of paper to the most *recherché* envelope. We have lately got into the habit of doing all these matters very prettily ourselves, but must still be pleased with the variety of neat contrivances for making the writing-table agreeable, especially to those who never write anything beyond a complimentary note, or invitation-card. It is to Prussia we are chiefly indebted in this department.

A collection of scientific books, all from Brunswick, and a *hortus siccus*, containing some dried plants, of extreme delicacy, preserved most beautifully, from Mansheim, are rather incongruously followed by a lot of highly-tinselled book decorations, by Mourir, Berlin. M. Fechner's industrious establishment, at Guben, Prussia, occupies a considerable space along the left side of this passage, with fancy sealing-wax, specimens of binding, and vignettes of an indescribable variety. Opposite are good specimens of type and printing, from Edw. Henel, Berlin. The initial letters are worthy of particular notice; and we rejoice to see this pretty style of decoration, once the

glory of the MSS. of our forefathers, again becoming fashionable in our illustrated works.

A thick volume of patterns of fancy, coloured, and stamped papers, from the manufactory of Alois Dessauer, makes one almost wonder how so extraordinary a variety can be produced. To young ladies who spend much time in "fancy-work," we recommend it as a most curious and interesting object.

The "fine needle-work" for upholstery deserves particular attention, being calculated to withstand the inroads of those destructive enemies of our furniture and clothing the moths. Besides other objects connected with clothing, we must not forget a great wicker cage of silk-worms, suspended from the ceiling in the room next the staircase.

Passing between some handsome trays, of Prussian manufacture, and a collection of elegant birdcages, by C. Diffner, of Wurtemberg, the inner compartments are occupied with rich velvets, silks, and satins, and superb muslin curtains. We may also notice the worsted damasks, which are now so extensively manufactured and employed in our own country.

Germany has always been renowned for its toys; and the most thoroughly spoiled child could hardly have a finer opportunity for indulging in a "smash," but for the prohibition against the admission of too juvenile visitors. The minute neatness of the furniture for baby-houses, the lilliputian china, the finished arrangements for the domestic comforts, and even fashionable accommodation of dolls of the most exclusive and fastidious cast in society, make us almost wish that we were once more children, with a stock of "pocket-money" as unlimited as the purse of Fortunatus.

To the attention of artists, the specimens of ultra-marine, in different states, will be interesting. It is unnecessary to observe that this is the most expensive colour employed in painting, and the value of the masses of it here exhibited must be considerable.

Herold's collection of wind instruments is surmounted by a nice model of a viaduct. Opposite, outside, is a set of specimens of enamel portrait-painting, by W. Rockhausen, of Saxony, adapted for forming the lids of boxes, &c. Some fine specimens of bismuth, from the Royal Saxon Cobalt Works, also claim attention. Inside is a rich assortment of stuffs, laces, &c.

Considering how printing has advanced of late, and what enormous speed must be necessary, in order to produce but half the works now published, it is interesting to witness the progress of machinery so applied. Although Germany was, for a long time, far behind us in producing works possessing any charm of elegance either in paper or typography, she has wonderfully improved of late, and the "cacata charta," so long the reproach of Leipzig booksellers, is rapidly giving way to a more attractive material. The indistinct and half-impressed types likewise, which used to annoy the eyes and the patience of the reader, have been succeeded by clear and symmetrical forms, combining, in some cases, economy of space with considerable neatness and distinctness. Saxony, which is a great printing and publishing district, contributes some interesting machinery connected with the art. We may specify Hoffmann, of Leipzig, who contributes a machine for planing printing types with three different planing tools, and a machine by Brockhaus, of the same town, for casting types,

with instruments for two different sizes of letters. This latter machine is shown at work by an exhibitor.

For convenience sake, and in order to embrace the most interesting articles, we must go back the passage under the gallery before mentioned, noticing the cloths, and other articles of clothing, with which the apartments are stocked. We must now gaze with admiration upon Messrs. Wittick, Kemmet, and Co.'s Lilliputian articles in ivory and bone. Half an hour may well be spent over this case; the little cabinets, but three or four inches in height, with their neat mouldings, exquisitely carved panels of open work, some of them with diminutive books inside; the frail-formed, but beautifully patterned chairs, tables, and screens, and other doll's furniture; the needle-cases, pincushions, and hundreds of other pretty bagatelles in this delicate, but difficult material, speak in silent eloquence for the neat industry of our German neighbours. Just underneath this case, which stands upright, F. Schmidt displays another, filled with cane handles, brooches, baskets, and a hundred other articles, of the same exquisite manufacture.

We must pass round to the diminutive glass wares of John Hominges, Stuttgart. Cases for liqueurs and spirits, glasses of homœopathic minuteness, and all the brittle paraphernalia of dolls' housekeeping, are well deserving of notice, especially from our younger visitors. Nor must we forget the wax flowers and animals of F. H. Riess, of Wurtemberg.

On the other side of this table are some toy furniture and garden implements, by Blumhardt, Stuttgart. We would fain dwell upon these pretty things, but we have too many important matters to allow us to stay here, so we must call away our readers to the other side of the building. Crossing between the Dante window and the "Amazon," we continue the—

ZOLLVEREIN.—Among many things contributed by Messrs. Bruckmann and Sons, Heilbrunn, a very gracefully-designed silver-plated chandelier, in a glass case, deserves praise. But we are again in a region of toys, toys far wittier and prettier than the many witty and pretty things we have just left. We are not to be frightened by some ominous-looking owls, excellently stuffed, who keep looking down upon us with sinister expression and expanded pinions; we are not to be pushed back by the determinate crowd which always fixes itself here. Even the lady who had lost her "little boy" some where on the opposite side, and was scarcely satisfied with being referred to the rules respecting "lost articles" in the transept—even an extra hot day would not prevent us enjoying and gloating over the wonderful stuffed museum of H. Ploucquet. We have heard people maintain that dumb animals are endowed with reason. This is a still greater paradox; dead ones are almost invested with life—life the most picturesque, the most entertaining, nay, even moral and satirical.

As might naturally be expected, the story of "Reynard the Fox" plays a conspicuous part in this collection. The origin of this story, long sought for by literary critics, extends into greater depths of antiquity the farther the inquiry is carried. According to Hallam, "it has been found written in French verse by Jaquemars Gieleé, of Lille, near the end, and in French prose by Peter of St. Cloud, near

the beginning, of the 13th century. Finally, the principal characters are mentioned in a Provençal song, by Richard Cœur de Lion." There is no doubt of the early German origin of the story, and Caxton's "Historye of Reynard the Foxe" was published in 1481. The amusing groups before us exhibit Reynard in his own skin, and are certainly quaintly illustrative of some of the best scenes in this ancient satirical romance.

But it is not to foxes alone that the fertile brain of M. Ploucquet has applied itself to find materials for these still-life illustrations of living actions.

The other stuffed birds and other animals are arranged with wondrous fidelity to nature. The most remarkable is a collection grouped with most artistic skill, so as to represent scenes from nature, to reproduce in actual form some of Sneyder's most celebrated pictures. There is a group of owls protecting their young against two weasels; also a fox's lair, which deserves more than passing attention; and a grotesque sporting-piece, in which the sportsmen are weasels and stoats, firing with miniature guns on the smallest of leverets. Then there is the story of another fox, who inveigled a poor little timid puss to go home with him, and is seen leading her half-reluctantly and half-confidingly along. The next representation shows Master Reynard reclining on his couch alone, enjoying, with the most comic dignity and comfort, the sacred post-prandial hour of rest so necessary for sound digestion. These and many other scenes, in which animals are made to play human parts with infinite humour, and yet retain throughout their distinctive characteristics, must tickle the fancies of old and young, and certainly draw crowds of visitors.

Opposite to this collection is a boar-hunt, illustrated to perfection. The animals are excellently stuffed, and their grouping brings out all the ferocity of the animals to the very life.

Before we proceed further, we must, if we can, step back a few paces, and admire a model, the chief feature of which is a lilliputian fountain, casting forth a stream of real water. Past it are some excellent specimens of metal-wire gauze, of great delicacy of texture, and considerable denseness of fabric, by J. H. Stohrer, of Stuttgart.

The model of Cologne Cathedral is excellently built, and gives some idea of the magnificence which is lost to the world by this noble structure remaining unfinished.

We now pass on into the large room at the back of the rooms next the nave. This is almost entirely taken up with cutlery and iron-wares from Messrs. Dittmar, of Wurtemberg, and Breches, whose London agent is Mr. O. Frauenknecht, 80, Bishopsgate-street. In the same department are several stoves, one of which, by Banns, of Coburg, deserves notice for its ingenuity of design. It is of polished iron-plate, and represents a knight in complete armour, with a base of cast-iron. Further on are some stoves, constructed to prevent suffocation from vapour; a marble chimney-piece, with the Medusa's head in the centre, and old Fauns on either side. This, which is particularly elegant in its workmanship, is contributed from Poryelt and Harperath's Marble-works, Cologne. Messrs. Hoffmann and Son, of Frankfort-on-the-Maine, furnish a most elegant stove, executed in clay, with a virgin-white surface, beautifully panelled with open arabesque devices. It stands very high, and looks like a tower

of porcelain; but, by the introduction of an open fire-place and hearth in the lower part, all the advantages of the stove are combined with those of the ordinary grate, and we can enjoy the Englishman's favourite luxury, expressively known as "seeing the fire."

The greater part of the centre of this room, the contents of which afford satisfactory proof of the perfection to which iron-work is carried in Germany, is occupied with machinery and carriages. One or two massive boilers will not be passed over by those who are interested in these matters; and the iron safe, from Magdeburg, which we find just before entering the octagon room, is the largest of the kind—a perfect whale among dolphins—in the Exhibition. Its internal fittings, as well as its outward strength, deserve all commendation.

**OCTAGON ROOM.**—This apartment, the entrance to which is a little to the left of the monster iron safe, well deserves a lengthened description. The ceiling, which is of oak-coloured Gothic paper, excellently combined with the plain red hangings round the walls, is, like the walls of the apartment, octagonal, and is open in the centre; thereby giving a pleasing, but not too glaring, light. Four recesses occupy the smaller sides of the octagon, and the two entrances,—one communicating with the nave, the other with the passage under the inner gallery, by which we are supposed to enter it,—are opposite.

Entering as we before mentioned, and proceeding towards our right, we will notice, in succession, some of the beautiful objects with which this room is literally "thick set."

A beautiful cabinet, with some portfolios, adapted for writings or drawings, the whole adorned in a rich style of mediæval illumination, by Fortner, of Munich, and a handsome chair just opposite, by the same manufacturer, are remarkable for the combination of flat gilding and minute decoration with strength of workmanship.

In the first recess is a fine bust of Ludwig, king of Bavaria, and a bold picture, by J. Muhr, of Munich, representing St. John. It is stercochromic, upon a mortar ground, plastered on wood, and furnishes a specimen of a new method of producing indestructible paintings on walls.

"Innocence playing with a nest of little Loves" is a pretty conception, gracefully worked out in marble; but some of the infantile figures are rather heavy.

Paul Gropius, proprietor of the Diorama at Berlin, next exhibits a collection of ornaments and figures formed of stone-paste, beautifully arranged in an ornamental carving, coloured, gilt, or bronzed, and relieved upon rich dark-green velvet. We will give his own account of this material:—"The stone-paste ornaments unite with perfect accurateness of form the great advantages of lightness, solidity, and cheapness. Without great preparation, their single parts can also be fastened upon wooden walls, without damaging by crumbling or loosing. The stone-paste admits of colouring or gilding of any kind. The manufactory is able to deliver beyond 4,000 numbers of these decorations, consisting of rosets, consoles, statuettes, candelabra, friezes, capitals, chandeliers, &c., and short ornaments of any style of building, to be employed in the most various manner." We heartily recommend a careful inspection of the beautiful



specimens of this elegant manufacture, furnished in the elegant wall-decoration on this side of this superb apartment. It is almost unnecessary to remind the reader to what height the manufacture of artificial stone has risen of late years, or of its superiority to the common cement, both in strength, in its capability to convey the sharpest and most delicate touches of the designer, and in its greater freedom from brittleness.

We have heard much of Dresden china, and even in old comedies this is one of the established excuses for ruining a husband. Sir Peter Teazle had his grievances on this head, and the "Spectator" often laments a similar taste, as a favourite medium for ladies of ton "making ducks and drakes" of the fortunes of a too indulgent or too henpecked spouse. The china contained in the next recess of the "Octagon" would drive a husband, so situated, to utter despair. We do not speak of tea-cups, perfume-jars, vases to hold nothing, inkstands, or fancy groups of figures, for these are all over this and many other compartments; but the *Camelia japonica*, with its dark-green, fresh-looking leaf, not thicker than the original, and the flower itself, with the same delicate paleness, the same smooth, but not bright polish, is a feast for a botanical king. The great triumph of art is in the perfect openness of the whole. There is no stout stem of chinaware in the centre, to afford support to a number of strong branches; but the whole is composed of the same twig-like stem as the original plant. It is altogether the prettiest thing of the kind in the whole Exhibition. Behind it is a handsome looking-glass frame and stand, composed of the same material. We must not forget two vases, 4 or 5 feet high, one of them in the *rococo* style, gracefully adorned with the entwined foliage of the convolvulus and nasturtium; the other imitating the Greek, and evinces a chaster taste; it is decorated chiefly with enamelled paintings, in the forms of medallions, round the base and the lid.

Some beautiful copies of paintings on porcelain claim notice, not only for their enamel-like softness, but for the excellent copy of the "Blind Fiddler." It is pleasing to find this most popular work of Wilkie, the artist who has upraised the rusticity of England to the realms of art, appreciated in a country where a more rigid and conventional school of art has, comparatively speaking, excluded the treatment of subjects more approximate to the ordinary walks of human life.

In another recess is a masterly group, in plaster, by Professor Ernst Rietschel, of Dresden. It represents Mary kneeling by the side of the dead body of Jesus Christ. The grace of the female figure, and the downcast expression, in which love, sorrow, and veneration are simultaneously mingled, are admirable.

Between two handsome porcelain candelabra, we meet with our old friend "Jean Maria Farina," &c. &c., whose rough wooden boxes, with their quaint views of the old city of Cologne, claiming no small antiquity for the firm itself, are so gratefully remembered between the "sets" at evening parties, and which will become more agreeable as the Exhibition continues to increase in attraction. Our old acquaintance, however, makes a dashing appearance here, but perfectly antique and respectable. A small suspended cabinet, beautifully carved in oak, with "practicable" doors, deserves praise for its own elegance. But it has a more interesting claim upon our atten-

tion, when, through the openings, we recognize the slender, ungainly-looking bottles of green glass, with their unapoplectic long necks, and with the curious coil of queer paper covered with queer experiments in writing one's name in awkward situations, known only to the gifted holders of "patents." Beneath is a basin, where a perennial supply is kept flowing, for the benefit of lady visitors. A similar liberal arrangement has been made in other parts of the building by certain of the "fine-pussed gentlemen" connected with the *agrémens* of the toilet-table.

The "Penitent Magdalen" is a work of art full of sadness and pathos, although, to confess the truth, we would rather have seen statuary excluded from this room. For ourselves, we exact a graver and less-interrupted neighbourhood for works of art of this description; and although the general effect is agreeable, some visitors to this room will complain of a want of congruity in the objects associated together. For instance, we have forthwith to direct our reader's attention to three lilliputian clocks, much smaller than ordinary watches, all telling the right hour with most conscientious consistency, but certainly forming a strange contrast to the "Magdalen," behind which, in a corner of the recess, they are placed.

A lady's desk and cabinet, in the *renaissance* style, by Barth, Brothers, of Würzburg, is extremely beautiful. Among its many decorations are two delicate inlaid portraits of her Majesty and H. R. H. Prince Albert.

Around the room and in its centre are some superb vases and other ornaments in porcelain, from the Royal Saxon Manufactory of China, Meissen. The royal blue vases, with portraits of the same illustrious personages; another vase, exquisitely decorated with Watteau figures; and the superb articles above mentioned, bear witness to the excellence of this establishment, and their success in producing the most finished specimens of this graceful style of ornament. The jewellery of Messrs. Steinhaur and Bier, of Hesse-Cassel, and a beautiful vase of flowers, in silver, must not be forgotten.

We have now to speak of probably the most beautiful object in this room. In describing a splendid tent in the Indian department, the reader will recollect our mentioning the number of beautiful chess-boards with which it was furnished. All these are eclipsed by the one now before us. The board, which is raised a few inches, is surrounded by a deep rich border, covered with exquisite mosaic inlayings, in which pearls, turquoise, and other stones, are plentifully scattered. Four grotesque figures in gold support the corners, from which hang rich festoons, decorated in the most superb and delicate manner. In the centre of each of these festoons is a small, rich, green lizard, at which two silver storks, one on either side, are supposed to be pecking. The squares of the board itself are alternately tortoiseshell and mother-of-pearl. The chessmen are of gold inlaid and decked with silver, and of silver, similarly decorated with gold. The beauty of the design of the figures is only equalled by the costliness of the materials. The whole is valued at 1,200 guineas. The costumes of the figures are mediæval; the "castles" are supported on well-proportioned elephants; but the bishops have a costume much more redolent of the church "militant" than spiritual. This unique piece of workmanship is constantly surrounded by an admiring crowd.

Quitting the octagon room, we come to one of the most amusing and interesting objects of the whole Exhibition. It is contributed by the Association of Manufacturers at Sonenberg, Saxe-Coburg and Gotha, and consists of a tableau of plastic-work, the size of a small room. It forms a complete landscape, representing a view at a short distance of Castle Florence, Rosenau, the country palace of the Duke of Saxe-Coburg Gotha, and the residence of her Majesty when on a visit to the duke. It must be remembered more impressively still as the birth-place of Prince Albert. Behind the castle, the distant landscape and mountains are excellently represented, and in front of it is a road, running under an archway on the left side, and lost in the winding pass between the mountains. On the foreground is a rustic inn, in the good cheer of which about four hundred figures are revelling. A rural *fête* is supposed to be going on; and the figures, which are capable of motion, are full of life, humour, and picturesque arrangement. One fellow is chastising a refractory dog, who has invaded his pan of sausages; another is selling nuts from a barrow; another party are dancing round the Maypole, the floor being ingeniously contrived to turn round with the little automata placed upon it. Drinking, making love, quarrelling, bargaining, cheating, gossiping, and all the usual business of such a matter, are being conducted with complete and indisputable accuracy. Even a band of music is not wanting. This scene is a very interesting one, and is suggestive of the sociable reunions of the lower classes at certain times, to which the enlarged liberality of some of the aristocracy has of late given encouragement. We should like to see a similar moving model of an English fair, with all its rackets schemes of diversion well illustrated.

J. Julius Winchermann, of Berlin, exhibits a splendid shield, of antique design, and other articles, produced by the electrotype process.

In the centre of the front of this compartment, on a purple velvet pedestal, is a splendid table ornament in oxydised silver, by J. Wagner and Son, of Berlin. This represents an elevated tripod trophy, forming a vase-like monument, ornamented with numerous figures, fruits, leaves, arabesque ornaments and embellishments, surmounted by the figure of Intelligence crushing the serpent of evil and ignorance. It is admitted, by all persons of taste who have seen it, to be one of the most perfect specimens of design, chiselling, moulding, and execution, that has been produced in modern times, and does as much credit to the designers and skill of the workmen of the Berlin school of silver-workers, as does the magnificent conception of the illustrious Rauch to the higher school of statuary. Some splendid works in opaque glass, and a beautiful case of swords, by Hoeller, fill up this area.

Toys again! It is no use laughing at German toys, they are much too clever for that, and we despise people who won't enjoy anything for fear of being thought childish. Here are elephants, tigers, cats (some with mice in their mouths), dogs, and other inhabitants of the zoological gardens, in paper, but very sleek, round, and solid; and, if they were only provided with glass eyes, very life-like. These lead us to a collection of laces and muslins, much less interesting to ourselves, but which our lady readers will like better. Before we have done with the Zollverein, a small compartment, marked "Northern States of Germany," must claim our notice.

Few of our readers are not familiar with the Castle of Heidelberg, but few of them will be prepared for so splendid a view of its mighty dimensions as the beautiful model here exhibited furnishes. We only regret that it is not placed higher, as the picturesque view of the grand tower, from the deep valley below, is lost by the want of elevation. At present, the bird's-eye view which we obtain of the courts and squares of this noble old pile, is a fine illustration of feudal Germany, and of the old political principle of placing the means of defence and offence on a height commanding all adjacent resources, but yet itself screened from aught but the most systematic and well-sustained aggression. With the colouring of the model we are less satisfied. It is conventional, and wants variety. In fact, too many of the best models, here as well as in other places, are spoiled by the same defect.

The prevailing taste of the place for exhibiting "trophies" of various articles, has not been forgotten by M. Meyers, of Hamburg, whose tasteful arrangement of walking-sticks is by no means to be despised.

Despite all that we have heard of the smoking propensities of German students, despite all that we see of this practice amongst those Germans who honour our country with a visit, Germany does not "come out strong in the pipe line." To be sure, there are some capital meerschaums, but nothing but what we could beat at Fribourg's. The Austrian room of pipes is something like.

The furniture of this department well deserves inspection, but there are few things possessing sufficient individuality to claim especial notice.

After looking at some very dexterous work in hair, we return back to the nave, where there is a basso-relievo, by Engelhardt, taken from a design in the gallery, which we shall mention hereafter. A splendid gun, in cast steel, by F. Krupp, and the Berlin wool, which lines the sides of the staircase recess, enable us to bid farewell to Germany, and enter—

AUSTRIA.—Outside the first room we notice a clever, but heavy statue of Field Marshal Radetzky, by Fernhorn, in cast iron, bronzed, and a couple of vases, ingeniously formed of pieces of rough stone, jointed together with a kind of "rough cast," the cornices and ornaments being elegantly polished. They are the work of Gottl. Carlsbad, Bohemia, and well deserve notice. Within is a room filled with rich cloths, forming a somewhat solemn introduction to the "pipe room," as we may justly name it. Every variety of design and ornament, every practicable material, seems brought to bear upon the noble art of smoking. Some superb meerschaums claim especial notice, not so much for their size (for we have seen larger), but for their splendid silver mounting. Near them is a pipe splendidly carved in ivory, representing, with great distinctness, the storming of Ofen, in the late Hungarian war. Karle Litschke, of Vienna, is the exhibitor of these very curious specimens of Teutonic art. The figures are extremely spirited; in fact, it is a pity that art should be thrown away upon such a purpose.

A variety of buttons, card and cigar cases, toys and dolls, some of them automatons, fill the next room. There are also some pretty time-pieces, in mother-of-pearl. Among the self-moving "wind-up"

toys, we may notice a lady playing the piano, with, we regret to say, very stationary legs; a revolving image of Taglioni, and a company of galloping horsemen, carriages, &c. Among the "boxes of toys" we cannot help noticing one filled with fruit. The painting of the wooden apples, cucumbers, &c., is worthy of much praise. Some useful jointed dolls, or lay-figures, at the end of the room, deserve the attention of artists. One is the full size of life.

After looking at the specimens of leather, dressed and undressed, gloves, wool, and miscellaneous articles, not forgetting a case of fine silver-ware specimens, by Baecher, of Prague, we must pass to the slip running along the outer side of the building, which is filled with specimens and articles of iron, tin, &c. We may point out the cooking apparatus, in iron, with non-metallic enamelling, contributed by Messrs. Albrecht, of Silesia, and L. Bartelmus, of Bohemia. The outer side of the room is rich in a store of iron bars, plate, &c., as well as in a large collection of scythes. We must particularly notice a coil of pressed leaden pipe, 900 feet in length, remarkable for its thinness and equality.

In a small compartment leading back towards the nave, is a collection of files of all sizes. On the opposite side are some specimens of refined and block copper, quicksilver, and litharge, sulphur, and other mining produce. Some specimens of type and cutlery, and some monster gimlets, lead us to an excellent collection of chemical articles, furnished by W. Battier, of Prague, Berlin. This case is most interesting, as we see the various poisonous herbs, many of which are used only by the homoeopaths, in their natural form of the dried leaves, roots, &c., and not as extracts or tinctures.

Franz Xaver, of Vienna, has sent in some mechanical legs for the comfort of those who have had the misfortune to subject their natural ones to the surgeon's knife. The most remarkable metallurgical contribution from Austria is a stove, full of figures, representing hunters, bear and boar hunts, the various operations of husbandry, and having many curious and quaint devices besides. This fine production is from Prince Metternich's mining-works.

A trophy in lucifers, inserted into a perforated card, or rather embedded in a monster lucifer-box, a separate cell being allowed for each, forms the device of the Austrian eagle, the ends of the lucifers being tipped with various colours, so as to distinguish the lines of the pattern. A supply of fancy lucifer-boxes, in all kinds of human and other forms, accompanies the trophy. Candles and other articles in stearine, including two large medallion portraits of her Majesty and Prince Albert, rough fleeces, and articles in leather, complete the contents of this room. We must not, however, forget a case, at the north side, exhibiting specimens of bricks in various useful and elegant forms and sizes, from Miesbach's great brick-manufactory near Berlin, which is the largest in the world, employing 4,860 persons. Above the case is a view of this "monster brickfield," which is like a small town, and in the other compartment a collection of specimens of coal and lignite.

As we return to the nave, we pass between some beautiful articles in china and porcelain. The fame of Bohemia in the manufacture of this class of articles is generally known, and the contributions from that portion of the Austrian dominions to the Great Exhibition are, if anything, rather calculated to extend it. We would especially

direct attention to the contributions from Elbogen, in Bohemia, which contain some remarkably fine vases and jars, than which, for size, design, and colour, it would be difficult to conceive anything more beautiful. We were quite unprepared for anything like the rich and mellow colouring in some of these articles. The art of porcelain-painting, as exhibited in these and other specimens of the same kind from Plattendorf, Winterberg, and Vienna, has truly reached a lofty position. A set of dessert plates, each containing a view of Tiberias, Sidon, or some other remarkable city or place in the Holy Land, or the contiguous countries, deserves notice for the beauty and softness of the colouring; they are contributed by Christian Fischer. Just at the corner are some teacups, which, from the rich massiveness of the gilding, seem to be solid gold, relieved in colours, instead of coloured china decorated with gold. Opposite is a collection of beads, and, among many other pretty articles in glass, a fanciful tub, with a tray of liqueur-glasses, in pale pink and crystal, are charming for their delicacy. The next Austrian compartments are filled with rich damasks, in silk and worsted, shawls, and table-cloths of *recherché* design, and various articles adapted for clothing. In this most important section, however, it must be allowed that Austria is not able to compete with the men of Leeds and Manchester. The white cloth made for the uniforms of the Austrian officers is undoubtedly of extreme fineness, both as to texture and colour, and equal to anything we have seen in this country, but, taken as a whole, this department is one in which Austria fails to assert a pre-eminence.

Outside these rooms is another brilliant display of the Bohemian glass, now so fashionable in England. Two large alabaster vases, by Hofman, 7 feet in height, cannot pass unnoticed.

In introducing our readers to the Austrian *Sculpture Room*, we shall begin on the left hand.

A mantelpiece in marble, by Benzoni, decorated with eight figures of boys carrying dead animals of incongruous qualities, seems to us illustrative of the power of the little blind god over all classes of living creatures. A girl stepping into the water, about to bathe, by J. Gubber, of Venice, is graceful, but spoiled by a very indifferent face. The boy catching a grasshopper, by Monti, of Milan, is a charming, graceful production. The grasshopper is rather larger than a tolerably-sized mouse; but we suppose the artist was hindered making it more proportionate by the hardness of the material. "Candour," represented as a boy, with his hair plaited, so as to disclose the openness of his forehead, and with a dog licking his lips, is pretty enough.

But one of the most curious articles exhibited in this department is a copper-embossed tableau, representing the battle of Arbela, after Le Brun's well-known picture. It contains many hundred figures in a relief of 3 inches, produced from a single sheet of copper, about an eighth of an inch thick, hammered and punched up with punches of various forms and sizes; the sheet of copper being passed through the fire hundreds of times, to soften it and make it malleable. The artist, who is self-taught, was occupied on this extraordinary work five years; and has also contributed a tableau representing the capture of King Porus, with 217 figures embossed by hand on a plate of silver weighing 18 marks 3 ounces.

A beautiful chimney-piece, the centre ornament of which is a nest of Cupids, by Gaetano Montelli, of Milan, is a most exquisite piece of work. In the middle of the room we were most struck with a marble carving, of surpassing delicacy. It represents a number of Cupids revelling in the vintage, with the infant Bacchus at top. Some of them tread the juice from the newly-gathered clusters; others, with infinite gusto, press them to their lips. The interweaving of the vines with the figures is delightful. "Atala and Chactas" is a pretty group, and suggestive of this well-known story. It is the work of Innocenzo Fraccaroli, of Verona.

Opposite to these are some pretty vitrified paintings on enamel, porcelain, and earthenware. A magnificent pier-table and looking-glass-frame, exquisitely carved in white marble, must not be passed by without a word of praise. "Ancient and Modern Love" is the name of a pretty pair of statuettes, by Monti, in which Cupid first appears as a poor naked beggar-boy, after the truly antiquated legend, and then as a modern *petit maître*, tricked out in the most finished young gentleman's attire.

In the inner room, we particularly notice a sepulchral group on our entrance. Grief, personified, is bending over a tomb with an expression of tender but despairing sorrow. Above the sepulchre, Faith raises her clasped hands to heaven, in impressive and grateful adoration. The contrast between the two figures is truly artistic, and conveys a religious moral with which few sculptured works are equally rife. It is the work of Democrito Gandolfi, Milan.

Giovanni Emanuel, of Brescia, contributes a pretty group of a boy feeding young birds. In one hand he holds the parent bird, who, with a worm in her mouth, is eagerly striving to reach the callow offspring he holds in the other.

"Jephtha's Daughter," by Galli, is chaste and pensive. The sculptor appears to have adopted the notion of her being condemned to perpetual virginity, not slain by her father.

Monti, of Milan, is rich in specimens of art, of no common order. A veiled Vesta, exhibiting the outlines of the features obscurely seen through the light drapery, is admirable. So delicate and transparent is the drapery, that we can scarcely believe it marble. Eve after the Fall is also a beautiful work of the same artist. The tasted apple lies at her feet, telling too plainly the reason of her downcast and conscious looks. The figure possesses great delicacy and softness.

"The First Step," by Pietro Magni, is a charming group. A young mother, in the picturesque costume of the Italian middle classes, is teaching her infant son to walk. The gentle look of maternal pride with which she looks down upon the first attempt of her offspring, is pleasantly contrasted with the half-vacant, infantile smile of the youngster.

"Agar and Ishmael," by Max, deserves much more praise than the figure of Ishmael exhausted, which is in the middle of the room.

"The Beautiful Beggar" is the title of a group by Dominico Candolfi. A widowed mother, veiled, and nursing an infant, is represented with two other boys. The foremost one makes the following pathetic appeal:—"I am an emigrant, my mother is a widow, and I have an aneurism of the heart." To say the truth, this is a very natural and humorous make-up, for the boy looks unusually

chubby under such afflicting circumstances. It is not at all a bad illustration of continental begging.

"Susanna," by Antonio Galli, is good, and the same may be said of "Hebe," by Kehsymurni; but the eagle looks like a turtle trying to walk on its hind legs.

A bust of the poet Monti, by Sangiorgis, deserves great praise for its dignity of expression and boldness of execution. Equally good, if not better, is a bust of Christ, from the same sculptor; who also contributes a statue of the Virgin, apparently founded on the "miraculous conception."

The last group we shall notice is "Pan and Syrinx," by Croff. There is much humour and mischief in the countenance of the goat-deity, and the figure of the nymph is delicate.

We must now cross over, and enter the compartment just opposite the Mazeppa group.

The objects connected with the arts of printing and engraving first claim, and well deserve, a lengthened notice.

On the wall at the right hand are first placed six chromo-lithographs, which have been executed expressly for the London Industrial Exhibition. They consist of two flower-pieces, one fruit-piece, one still life, one study of a head, one *genre* piece, and a portrait of the Emperor Joseph II. The original paintings are hung up next to them, for comparison of the fidelity of the colour-printing. Each original painting cost about £25, while the copies in printed colours cost only 1s.

Below, on the table, are placed some impressions without varnish, in order to show the appearance of the printing when it leaves the press.

The impressions printed in one single colour, which stand next, exhibit the manner in which the various colours have been combined. The point-holes, which may be perceived, are produced by a pin on the stone, by which the several colours are made to fit closely to each other.

Beyond these are seen specimens of printing in colours, the sixteen flowers being taken from Hartinger's "Paradisus Vindobonensis."

At the lower end of the walls, on the left, are several excellent chromo-lithographic drawings of diseases of the human skin, by Dr. Elfinger, which will be shown to professional gentlemen if desired.

The artistic and scientific productions of the establishment, which have been printed in the course of the last two years for the Memoirs of the Imperial Academy, include gorgeous butterflies, various petrifications, anatomical dissections, fragments of mosaic, splendid copies of mediæval art, copies of portions of rare codices, Roman arms and vessels, &c.

Next to these objects of art are seen photographic drawings executed last autumn, and some of them even in the shade. The frames in which these are set were produced by means of the galvanic process.

Arranged in little boxes are placed galvano-graphic objects, which are produced in the following very peculiar manner. The painter, or the party drawing, paints his picture with the paint-brush on a prepared copperplate. This is then placed in the galvanic apparatus,



and an engraved plate is produced, upon which the rest of the process is executed. From the engraved plate thus produced, the impressions are printed. The original painting is thus, as it were, obtained from the very hand of the artist, without the aid of the engraver.

We now come to the department of Chemitypy, an application of science discovered by a native of Copenhagen, named Piil, by which the copperplate style of engraving may now be obtained from raised surfaces, like woodcuts, instead of, as formerly, from engraved plates. The impressions thus produced are printed at a printing-press, which accelerates the production fifty times, and cheapens it in the same proportion.

The process is as follows :—A zinc plate being covered with etching ground, the plate is then etched, and the surface covered with an easily fusible metal; the plate is then scraped so as to leave the metal in the hollow parts produced by the etching; the surface of the plate is then again etched, to remove part of the zinc plate for the elevation of the design; the plate is now, like a woodcut, fit for printing.

The visitor will next observe some impressions from steel plates, executed by the first artists of Vienna in this department, as illustrations to several poems printed at the Imperial Establishment.

We now arrive at the principal object of the Imperial Establishment—**TYPOGRAPHY**, with which is inseparably connected the extended knowledge of languages. In the Imperial Establishment the study of languages is more prominently kept in view than in any other typographical institution extant.

A pedigree of the alphabets of the whole globe commences this series of typographical curiosities. On one hand from the Chinese characters, to which are added the Koreanic and Japanese characters, and on the other hand from the African hieroglyphic signs, which are immediately followed by the Phœnician characters, which are supposed to represent the first known signs of writing. All the rest of the alphabets take their origin from these, and then branch out into numberless ramifications, which may be traced up to the characters used throughout the world at the present day. But the most remarkable and interesting production in this department is Auer's collection of the Lord's Prayer, printed with Roman type in six hundred and eight languages and dialects, the second section of which actually contains two hundred and six languages and dialects *printed in the characters proper to the language of the respective nation*. To each Lord's Prayer printed with foreign type is appended a literal translation, and key for the pronunciation of each separate letter, by which the work is rendered generally accessible. Two tables, containing the characters of all the languages of the whole globe, conclude the second section of this great collection of the Lord's Prayer.

Not only are there represented all the foreign types printed in a tabular form themselves, but the original letter-punches are exhibited, in cases below on the tables, so that the types may be compared with them.

The combination of the Chinese characters develops a new invention of the highest interest. The eighty thousand signs of that

language are formed in the same manner as music is formed with moveable type, according to the typometrical system of M. Auer, the director of the establishment.

The Imperial Establishment is also provided with types for the use of the blind of the European and Asiatic nations, by which raised letters, for the purpose of reading by means of the fingers, are produced. Next to the letter-punches, the matrices taken from them are exhibited.

Among the series of electro-galvanic objects are some reliefs, which prove in the most striking manner the triumphs of electro-metallurgy in cases where the multiplication of objects is desired, whether they be flat, raised, or sunk. We may particularly notice the copies of fossil fishes. The original was first incrustated with gutta percha. This crust was taken off, and, after being prepared, placed in the galvanic apparatus: a copy, quite fit for printing, was thus obtained without the aid of a drawing.

The system of Typometry, or the method of calculating and measuring the space taken up by each separate letter, now claims our attention. Not only is the advantage of being able to calculate by this system what space manuscripts will occupy when they are printed, of great importance, but a still greater advantage attaches to this system; namely that all sorts of tabular matter may now be much more easily arranged, because the space taken up by each separate column can be calculated to the greatest nicety: this is of great importance in a technical point of view.

Upon the walls also is exhibited a work in the Japanese language, printed for the first time with moveable type, and accompanied by a German translation of Dr. Pfizmaier.

Below the objects illustrative of Typometry are specimens of different languages, printed on folio sheets. These commence with the German language of the present day; then follow the letters used for printing during the middle ages, the forms of which are represented by moveable types to the sixth century. The series progresses until we meet with the Gutenberg types, the gradual development of the character of the letters used at the present day being distinctly shown. A folio page of the Gutenberg Bible, in a frame, has been imitated with types which bear so deceptive a resemblance to the original, that the original can scarcely be distinguished from the copy.

Next to the German specimens of different ages we find those in foreign languages, from the Ethiopic and Amharic to the Zend, arranged in alphabetical order, whilst the two tables placed in frames next to the collection of the Lord's Prayer represent the characters of the different languages.

From the oldest specimen of printing of the Gutenberg Bible we arrive at the department of woodcut printing, otherwise called Xylography. The most ancient woodcuts occupy the first place, and lead us to the different coats of arms, to Albrecht Dürer's triumphal gate, the cuts of which have been collected, with the exception of a very few, by the Imperial Library. A number of initial letters and whole alphabets of the seventeenth century, also a number of seals, are here arranged. Various modern drawings, landscapes, figurative and historical pictures, form a continuation. Several larger woodcuts,

especially some religious objects, the originals of which were drawn on wood by Professor Führich, claim the particular attention of the visitor, being executed with great skill.

Next to these upon the tables we see moulds of gutta percha, and others produced by the galvanic apparatus, intended to spare the original woodcut during the printing. Millions of impressions may be taken, in case of need, from the copperplate thus gained.

From the department of Woodcutting we turn again to the Printing in Colours, by which the most various ancient religious objects of the ninth to the thirteenth century inclusive are reproduced in all their splendour.

Geometrical drawings of floors, as well of modern times as from ancient mosaics, and objects of natural history, form the continuation. Butterflies, petrifications, and anatomical subjects form the conclusion of this series. Upon the table next to the specimens in foreign languages, are various pamphlets and books, which being mostly destined for the East, are executed in Oriental taste. These copies were printed for the literati of Austria and of other countries.

Leaving this "typographical treat," not, however, without noticing the enormous sheet of copper, 30 feet long, by 30 inches wide, we come into a region of cutlery and tools. Two gigantic planes, well fitted for preparing the door sills of some Cyclopien mansion, and seemingly defying human power to wield, are among the most awe-inspiring objects in this department. But the most complete equipment for carpenters' work we ever beheld, is the cabinet at the end of the room, formed of plain deal, neatly carved, the lower part forming a well-appointed bench, provided with screw vices of every dimension. At the sides are planes either for smoothing, bevelling, or beading; chisels, adzes, and every implement that can possibly be desired. By way of contrast, a lilliputian carpenter's bench is placed over it.

Amongst the machinery, a Jacquard loom, contributed by the heirs of P. Gamba, of Milan; a seed-harrow and drilling-machine, by Horshey. The model of a Carmolian granary is extremely pretty. It is surmounted by some specimens of wash-gold frames.

Austria is absolutely great in furniture. Nothing of this kind in the whole Exhibition is equal to the collection displayed by this country. Before, however, we enter the splendid *suite* of rooms completely fitted with exquisite furniture, we must notice some handsome tables, one of them inlaid, in minute mosaic, with a representation of Napoleon ascending the Mount St. Gothard, by Mentasti, of Lombardy; and another, inlaid in a waving pattern, of exquisite beauty and novelty of design. Another table, which lifts up and forms a kind of hollow dish, formed of walnut-tree wood, is remarkable for the manner in which the grain of the wood is made to suit the particular curve or pattern required; by which strength is gained, although excessive lightness is, at the same time, obtained. Some chairs, made on the same principle, are also deserving of notice. Gröger, of Vienna, contributes a closet of ebony, of exquisite architectural proportions, with ornaments of stone mosaic, richly inlaid with gilding. There are two tiers of beautifully carved ivory figures surrounding it, or placed in various niches, representing St. Egydius, the patron saint of Illyria; St. Cyril, of Moravia; St. Wenzel, of

Bohemia; St. Stephen, of Hungary; St. Francis; St. Joseph; St. Leopold, of Austria Proper; St. Carlo Borromeo; St. Spiridion, of Dalmatia; and St. Stanislaus, of Galicia. There are similar figures representing the different arts and sciences; and in the various niches the most illustrious monarchs of Austria, from Rudolph of Hapsburg, the founder, down to Franz Joseph. This exquisite gem is supported on six gilt pillars. We confess our inability to convey an adequate representation of this choice *morceau* in all its minute detail. We unhesitatingly point out this cabinet as one of the most attractive ornaments of the whole Exhibition.

Passing by a splendid billiard-table, and looking at the wood-mosaics for flooring, by Carl Leistler and Sons, on the wall, we enter the suite of rooms, which, with all our remembrances of the Zollverein "Octagon," astonish us by the splendour of the furniture they contain. They represent the interior of a palatial residence.

The first apartment we enter is slightly octagon in shape. The floor is composed of geometrically arranged pieces of oak, and does not suffer by comparison with the celebrated floors in the library of St. Paul's cathedral, or in the King's Library at the British Museum. The ceiling is decorated charmingly. A dull, deep blue ground, relieved by lighter arabesque figures, serves as an introduction to a centre-picture representing Byron, in a pensive attitude. Medallions of Byron and Shakspeare, and illustrative of the historic and novelistic muses, are among the principal ornaments of the *ensemble*. The whole does much credit to the taste of M. Montenari, of Milan.

A picture of the "Virgin and Child" is enclosed in an oak frame, of the most massive and deep carving imaginable. It is, in fact, too fine a frame to put to a good picture, as the frame ought to be subservient. An enamelled screen, covered with Watteau groups and landscapes, is very pretty, but too frivolous for the staid dignity of the objects with which it is surrounded. To say the truth, these rooms are rather collections of exquisite detached objects, than judicious arrangements with a view to perfect general effect. A superb gilt and inlaid table adorns the centre of the apartment, and the sides are equally well filled with articles of the most *recherché* splendour. In particular, a toilet-glass of massive embossed silver, weighing 135 ounces, cannot fail to excite the admiration of beholders.

We pass on to the room containing "The Bed,"—we say *the* bed, for we never remember anything equalling it in magnificence. It is of large dimensions, and nobly proportioned. The foot of it almost resembles the carved altar-pieces found in some of our old churches, not, however, in Gothic. The posts, or rather the combined masses of carving which support the cornice, are richly festooned, and adorned with Triton-like figures. It is placed upon a slightly-raised platform of the same material, the whole being executed in rich rosewood. At the right side is an oratory, and some richly-covered chairs and couches, luxuriously stuffed, complete the furniture of this apartment.

The next room is fitted up as a lady's library. The book-case of carved German oak (designed as a present from the Emperor of Austria to her Majesty), is a superb specimen of the Gothic carving, which elicits the praise of all beholders. The books are also designed

for her Majesty, and prove that the art of book-binding has arrived at a high state of perfection in Vienna. They consist of the following works :—

1. The lyrical and dramatic productions of the Austrian crown lands, from the times of Henry of Offerdingen to our own days, in the German, Italian, Slavonian, and Magyar languages ; the whole in 270 volumes.

2. Two albums of national and standard music of Austria. Album No. 1 contains the original and national popular songs of all the tribes of the Austrian empire. This volume is richly bound, and displays on its cover the national costumes of the empire. The representatives of the tribes are grouped round the Austrian eagle, and their attitudes express the national peculiarities and tempers of the inhabitants of the various crown lands. Album No. 2 displays on its cover a record of the names of the greatest Austrian musicians and composers.

3. The plastic arts are represented by means of six albums ; viz. —Album 1 contains architectural drawings ; 2 and 3, sketches of religious and secular history ; 4, contains sketches from life of the present age. Album 5 is filled with sketches of romance and poetry ; and Album 6 contains landscapes.

The elaborately-ornamented covers of these portfolios display symbolic epitomes of their contents. They are groups in chased gold, silver, and bronze, enamel or gold, carvings in ivory, tortoiseshell, and ebony and buhl on velvet. The various drawings, ornaments, and arabesques have been executed by the most distinguished artists of the Austrian crown lands.

The dining-room, to which we next come, is nobly appointed. The sideboard, with its top of Carrara marble, will well repay a lengthened examination ; as well as the splendid candelabra. The immense table, at which it is stated forty-two guests can be comfortably seated, is magnificent in its solidity and exquisite polish. There are also thirty-six chairs to correspond ; and the rich carving and beautiful wood of which they are made, is the theme and astonishment of every visitor. The whole furniture of this magnificent suite of rooms is contributed by Leistler and Sons, of Vienna, and has, we believe, been purchased by the Marquis of Westminster for £14,000.

Going out of this set of rooms, the collection of imitation jewellery, by Pfeffer and Co., a superb candelabrum, and Bohemian glass, deserve notice.

HOLLAND AND BELGIUM.—A case of plate, exhibiting the different schools of art applied to silver wares, deserves more praise for its arrangement than for the extreme value of the articles exhibited. A corsage or pointe, made of diamonds and pearls, in three parts, so as to admit of being varied as an ornament, by Romain, of Rotterdam, is very elegant.

As we go on, a fine Deventer carpet, woven in one piece ; some rich chandeliers of glass, supported by gilt metal ; and some fine zinc castings, are set off by a matter-of-fact collection of soap, candles, and other things of common life.

As we might have anticipated, the bells by which the chimes are

rung in churches and cathedrals form a prominent feature in the display of this country, in which it is said they were invented; they are brought to great perfection in point of tone and tune, the former arising from the large quantity of silver added to the inferior metal, and the latter from the pains taken to render them really effective as musical instruments. In many of the towns and cities there are salaried musicians or professors, who, mounted high in the air in the church steeples, perform with great skill and effect upon these bells. The chime here exhibited has been cast in the foundry of Petit and Fritzen, near Helmond; they are highly ornamented, and weigh about 5,500 lbs.: the suspending apparatus attached is strong, although the frame-work would appear at first sight somewhat too light for the weight and vibration to which it must be constantly subjected. Such a peal of bells would be a valuable and appropriate present to a cathedral or large parish church.

Many models next present themselves, among which we may notice one of a ship of 600 tons, with atmospherical regulator; a crane bridge, which has been constructed by Conrad, chief engineer of the Dutch railway, over the Schie, near Schiedam, and is light and easily managed. A model of a rolling bridge, by the same engineer, over the old Rhine, below Leyde, is not apparently so satisfactory in its working, although it exhibits much novel ingenuity. For a country which keeps its head above water mainly by the counteracting influence of the wind,—the whole of Holland being continually under the action of windmills, which carry the surplus water out of the dykes into the sea,—we are surprised to find only one specimen of a water-mill in the entire collection. This mill has two screws, and is calculated to lift a large quantity of water. Some extensive models illustrate the application of iron to tube bridges and tunnels. A tremendous steam-engine, by John Cockerill, will not easily escape notice. Emile Drion contributes a remarkable collection of nails, some of enormous dimensions, well sorted and arranged. The outer wall exhibits oil-cloths for tables, chiefly from Brussels.

Among the pianofortes, one in oak, by F. Deck, and another in grey maple, beautifully decorated with flowers, by Jastreboke, of Brussels, attract chief notice. The furniture is very handsome; and one oak cabinet, decorated with the implements of the chase, and various symbols of hunting, with the sides supported by Cupids, well deserves attention. A. J. Leclercq, of Brussels, contributes some very handsome chimney-pieces, as well as a miniature model of one in plaster of Paris, exhibiting, with great freshness and vigour, the minute details of a most elegant design. The chimney-piece above it, supported by Fauns, is surpassed by few in the Exhibition.

In the next compartment, Roule, of Antwerp, supplies some rose-wood and oaken furniture, in the Gothic and Elizabethan styles, deserving of high praise. A mosaic straw round table, by Bertani, of Brussels, representing a capital view of St. Peter's at Rome, surrounded by views of the Rialto, Castle of St. Angelo, and other places of interest in Italy, is a most ingenious triumph of industry over the simplest and rudest material. Glancing at the splendid carpets which hang in the staircase recess, we cross the nave, and continue the Belgian department on the other side.

Before entering the rooms, we are struck with a pretty group, representing the fable of the lion who fell in love with a beautiful

maiden, and was so blinded by his passion that he suffered his nails to be clipped and his teeth extracted. The group is certainly agreeable enough, and bears the following quaint French couplet:—

“Amour, amour, quand tu nos tiens,  
On peut bien dire; adieu prudence!”

There are some excellent oak carvings just by; and within there is a Virgin and Child, by Jehotte, and a Virgin crowned by Angels, both possessing merit. The remainder of this department is occupied by articles of clothing, natural productions, a splendid collection of fire-arms, and some large cannon.

Keeping on the same side of the nave, we commence

FRANCE.—Messrs. Constantin, of Regent-street, display a temple-like case, with festoons of artificial flowers, reaching to the gallery, and filled with exquisite flowers in cambric. So superb is the imitation, that the flowers and rich deep-green leaves almost seem to impart an air of cool freshness to the objects around.

In the room of bronzes, gilt and decorated, we must especially notice the specimens exhibited by Aug. Lacarrière, whose contrivances for supplying gas completely do away with the clumsiness of proportion generally resulting from the large size of the pipes requisite for supplying the burners.

Among the numerous objects worthy of being remarked, is a lustre with crystal, well executed, and which, in spite of its necessary large conducting-pipes for the gas, may, for lightness and good taste, be compared to the wax-candle lustres.

A candelabrum of great dimensions and severe style deserves particular attention. It possesses good and well co-ordinated proportions. The girandoles, with moveable suspensions, in spite of the exigences of the gas, are ingeniously arranged.

A beautiful little group in bronze, representing several horsemen “taking a gate,” would be a fitting reward to the winner of a steeplechase. The spirit of the animals is wonderful.

A fully-equipped cab-horse, baying, by Boyer, also possesses considerable merit.

The brothers Mirois contribute an exquisite collection of bronze ornaments and statuettes; but of all the articles in this manufacture, a Bacchanalian group of boys, playing the drum, cymbals, and other instruments, cast “at chance,” pleases every one by its boldness and finish.

It is impossible to go into details respecting the superb candelabra, clocks, and other articles in bronze, variously decorated, which abound in the French department. In fact, so rich is the French collection, as a whole, that we lament the want of space which prevents our doing anything like justice to the many beautiful objects we should otherwise gladly describe. Moreover, selection is rendered difficult by the very merit of the productions. Some clocks, in the form of a globe, are prettily suggestive of time and the world, and their mutual influence on each other. A very rich one in deep blue, covered with richly-gilt stars, is particularly handsome and tasteful.

The china department, in which the brothers Levi shine pre-eminent, will scarcely bear comparison with the Dresden. It is

nevertheless very beautiful, and the delicacy of the painting compensates for its inferiority in formation. A blue and gold vase, with an exquisite painting representing Amphitrite riding over the waves, accompanied by the marine deities, tritons, &c., attracts much attention. Some exquisite hunting groups, in bronze, also deserve praise.

M. Fromont sends a case containing splendid articles in silver gilt. We must especially notice a toilet-table and glass, the sides of the cabinet being adorned with little figures of saints. The upper part of the centre is embellished with beautifully-enamelled shields.

In the centre of this room, not far from the last-mentioned case, a magnificent service of silver plate, exhibited by Oudiot, at once fixes our attention. The centre vase is a perfect model of bold and elaborate carving in silver. The designs upon the service are in excellent taste; fish, lobsters, turtle, game, dead birds, hares, &c., being introduced in high relief upon the tureens, and dishes. The epergnes and flower-baskets, at either end of the case, are chaste and elegant. The service has been executed for a French nobleman, and is valued at 50,000 francs. A coffee-service of silver, inlaid with gold, and another in which glass of a rich lapis lazuli colour is introduced, deserve especial commendation. We must not, nor will it let us, forget a splendid tea-fountain, standing nearly five feet high. On the top is an urn, and beneath this four teapots with corresponding sugar and cream-jugs in the intervals, and below are gilt medallion stands for 15 or 20 teacups. To the tea-drinking portion of England, the ladies, this object is one of especial interest.

M. Manuel exhibits a most beautiful vase in oxidized silver, representing the "Battle of the Amazons." It was ordered by Queen Amelie for the Duke d'Aumale. There is also a very superb jewel-case here, belonging to the Count de Paris, and many other mute mementos of the fallen dynasty. Some examples of *argent repoussé*, or hammered silver, are ingenious, rather than elegant; and we can hardly imagine the taste in Paris for the dark steel-coloured metal called oxidized silver. There is a good deal of originality in the designs of these articles, but an apparent want of the solidity and "weight of metal" of the English artists. The Paris manufacturers do not appear to avail themselves so much of the contrasts produced by the introduction of dead or frosted silver in combination with burnished silver.

The jewellery department presents numberless objects of great beauty, both in design and execution; but it is impossible to give attention to things so minute. We must merely advise the reader not to hurry out of a room where there is so much worth seeing.

Passing along the passage which runs under the side gallery, is a rich display of French articles of clothing. At the end we pass a pretty collection of fancy shirts, by Pierrot, free from ballet-girl or cricketing vulgarities. There is also a beautiful collection of shawls, by F. Crocs.

We must, once for all, notice the superb drawings, serving as patterns for sun-pictures, for shawls, chintzes, and every style of drapery or decoration. Few ladies who look at a beautiful shawl think of the artist who supplies the design. Enthusiastic in their admiration of the delicate fabric and the variety of the colours, they would hardly conceive the fact that a drawing minutely representing every hue, every device, of the admired garment, is produced by the



artist before a thread can be woven or worked. Among the exhibitors of such specimens we will mention the brothers Berrus, and Mons. Matheu, for cashmere shawls; M. Iesecq, for photographic designs. Some coloured daguerreotypes by A. Gouen, are less ghastly than these cadaverous, but faithful likenesses, usually are.

La Roche exhibits some pretty designs for printing on tissues; Bauerheller sends some good raised charts, one of which, giving a ground plan of Mexico, shows the wondrous progress of civilization in a place where the inhabitants once sacrificed their own children to the god of fire!

The writing apparatus and stationery is scarcely equal to that of Germany, but some of the drawings for furniture are most Chalon-like. The French certainly excel in one golden requisite of true taste—enthusiasm. We saw a man occupied in the simple, straight-ahead task of painting the name of the exhibitor on a stand; but, trivial as was the employment, his minute and hearty attention was a tremendous contrast to the careless independence which our own workmen exhibit.

Some handsome mantel-pieces, and beautiful designs for decorations for the sides of rooms, adorn the right side of this compartment. On our left hand are some specimens of printing in gold and colours, types, stereotypes, some of them proceeding direct from the paper mouldings; also raised types suited to the blind.

The specimens of A. Mame and Co.'s efforts are so deserving of notice, that we, without hesitation, quote their own account of their establishment:—

“This establishment, founded at Tours nearly half a century ago, prints and completes all the works bearing their name, and delivers them to the trade, bound in every style, from the most simple to the most elegant.

“The ruling thought which has presided at the commencement and development of this establishment has been to keep three principal points in view,—unimpeachable morality of the publications, extreme moderation of prices, and superior quality of materials used in every respect, notwithstanding the general employment of machinery.

“The book department is divided into three principal branches:—Books of education, church services, and books for primary schools.

“Each of the principal sections is subdivided into collections, composed (in more or less considerable numbers) of works capable of being separated, having a collective or individual value. These works, taken separately, carry to an eminent degree the amount of the articles of the catalogue; considering that each of these articles is not only to be found unbound and half-bound, but in boards, bound in different manners, likewise the readiness which permits immediate despatch at certain times, such as for new year's gifts, the distribution of prizes, the opening of schools, it will be well imagined that galleries containing more than a million and a half ready-made books are merely adequate to the enormous calls made upon the establishment by the smallest localities,—in a word, by every place where a school is to be found.

“A few words respecting those two important branches, printing and binding; by the means of which, all works, received in the form

of manuscripts, types, pasteboard, and leather, are sent out in the shape of volumes, fit for all orders, and for the different tastes of purchasers.

“Solely devoted to printing the books of this establishment, this department has always twenty machines at work in printing, glazing, cutting and lifting up the paper,—all put in motion by steam. It produces 15,000 volumes a day, supposing them to be duodecimos of ten sheets to the volume.

“The binding department, into which the sheets after they have been dried and collected in volumes are delivered, is the branch which employs the most hands, on account of the mechanical proceedings which have been unknown until the present time. One thousand hands are occupied permanently,—men, women, and children,—superintended by a certain number of foremen. The books of education are covered with pasteboard, stamped with silver or gold leaf, and colours, decorated with subjects in relief; or with linen, with or without gold or mosaic ornaments, with plain, marbled, or gold edges; or they are beautifully mounted in basil, &c. As to the prayer-books, they are generally bound very elegantly, from simple basil to shagreen and rich velvet, with silver and gold ornaments. Pasteboard is seldom employed, elegant as it may be, because it is not so suitable for volumes of common use.

“The books of education, as well as those of religion, are all embellished with engravings, composed and drawn out by the most celebrated artists, and executed on steel by engravers of the greatest skill. In fact, they are at once illustrated editions and books of taste. The printing of these engravings is performed in a separate department, and keeps in constant motion twenty presses of copper-plate.

“This establishment gives full employment to an immense number of workmen in the city of Tours, without mentioning the other branches of trade which it calls to its assistance; namely, paper-manufacturers, type-founders, ink-makers, pasteboard-makers, and curriers, &c. So convenient an arrangement in the different departments is seldom met with in other manufactories. All being constructed for a particular use,—surrounded by gardens which keep the air pure, and warmed during the winter by stoves which communicate hot air and maintain an equal heat throughout the establishment,—they comprehend all that is necessary for perfect salubrity, and offer to the numerous children who are employed an asylum more healthy than their own homes.

“The importance of the productions of Mame’s establishment, its incontestable utility, the concentration of all the branches in one place, manufactory and wholesale altogether, give them the right to think that there does not exist in Europe another establishment, at once industrial and commercial, of the kind, that has made an equal progress, and still goes on steadily for further improvement.

“The French Exhibition of 1849 conferred upon them the gold medal; when, at the same time, the President of the French Republic, on M. Alfred Mame’s being introduced to him by the Minister of Commerce, presented him (who is at the head of the establishment) with the decoration of the Legion of Honour.”

The improvement which has taken place of late in the science of advertising, has given rise to many pretty designs for advertisements

and prospectuses. Silverman's collection of specimens embraces a great variety, and is a useful study for those who want a hint how to get up an attractive circular.

At the end of this slip of room, we pass Dupont's case of specimens of ancient printing; and, noticing a beautiful cabinet on our right, we return back. Among the many objects of art and refinement which line both sides of our way, Firmin Didot's case, exhibiting his many handsome editions of the Greek classics, and other works of high importance, especially Dindorf's new edition of Stephen's "Thesaurus Linguæ Græcæ," will attract the notice of classical scholars.

As we go to the nave, we must not omit Dulau's specimens, in a recess to the right, of furniture, covered with leather, stamped and gilt in a bold relief. It well deserves a word of praise for its elegance and solidity.

Coming into the nave, the magnificent emeralds belonging to the Queen of Spain, and some superb articles of jewellery, are exhibited by Lemonnier. In the centre is a bouquet of large diamonds arranged as flowers, on elastic sprigs; the buds are enormous pearls, and the green foliage which surrounds and sets off their beauty is a mass of emeralds. Above this, is a tiara of sapphires, surrounded by diamonds, and graceful festoons of diamonds and pearls hanging from it over the hair. There is also a circlet or chaplet of diamonds, to be worn on the head; necklaces and bracelets, and stomachers studded with brilliants; and a brooch and pendant, the central ornaments of which are two enormous rubies. The value of this magnificent collection must be something astounding. Rouvenat has near this case a display of jewels, prepared for the Emperor of Hayti, of great beauty; and models of the crown, sceptres, state swords, &c., are also exhibited. Duvelleroy, of Paris and Regent-street, exhibits one hundred fans, decorated with every possible variety of painting and ornament. It is wonderful to see the multifarious applications of the elegant arts to these useful feminine ornaments. Among the many beautiful articles of furniture which are interspersed in the nave, two pieces of tapestry, by Castel, claim especial notice. The gloss on them resembles that of the richest silk velvet, and the design is exquisitely tasteful. Rich flowers, well brought out by dark-green foliage, are reflected in a varied stream. The lights and shades, despite the heightening of the tints, are most exquisite and artistic.

A word respecting M. Hadiot's moderator lamp, which is the most perfect invented up to the present time. The simplicity of its mechanism prevents its being ever out of order, and affords every facility for its management. After it is once filled and wound up, it will burn for eight hours without requiring any further care. Having neither pumps nor wheels, nor any of the many complications of the preceding systems, it will serve four or five years without wanting repairs. The beauty and elegance of its form renders it an article of ornament as well as utility. Its merit has been rapidly acknowledged. It consumes very little oil, its light is most brilliant, and the price moderate.

Among the cutlery, a monster knife, of splendidly-polished steel, is highly suggestive of a Brobdignagian appetite. M. Picault certainly deserves high praise for his Birmingham-like efforts in this

manufacture. A machine for opening oysters will make some epicures smack their lips.

Edme Voizot contributes pretty specimens of beads, in steel, Venetian and Bohemian glass, amber, garnet, and coral, besides various pretty articles in bead-work. A bead trophy, consisting of a seat on a pedestal, richly embroidered in beads, on crimson and grey velvet, particularly deserves attention. The pearl beads are also rich, large, and beautiful.

A collection of smelling-bottles, by Cornillon, displays some pretty Watteau designs, and some elegant enamel paintings of mythological subjects. This department is rich in jewellery; but there are few things to which we can direct individual attention.

Passing Bruneau's case, which is filled with various elegant articles for the dressing, work, or writing-table, as well as with snuff-boxes, cigar-cases, eye-glasses, and other things of great beauty, we next notice a group, representing a bird's nest, capially modelled in wax, by Cain; a Virgin and Child, in wood, by Knecht; and some admirable groups, illustrative of Parisian low life, modelled to perfection by Graillon, of Dieppe. After looking at the quaint rascality of some of the countenances, the lightsome humour and reckless gaiety of others, and the piquant raggedness of costume displayed in these little figures, we must allow the truth of the remark, that the beggars of France are the most picturesque beggars in the world.

At the two corners of this compartment nearest the nave, are some beautiful works in ivory. A Christ on the Cross is very fine, but, as a matter of ingenuity, we prefer the little models of ships, in the opposite corner, which, for minute attention to the details of rigging, &c., even the sails being formed of almost transparent ivory, cannot be too much admired. Outside is a collection of rich satin damasks, and some handsome specimens of arabesque decoration for the sides of rooms, in gold and white. Crouchet's beautiful works in *carton pierre* should not pass unnoticed. A central oval compartment contains a rustic subject, with animals, figures, and trees; hung round this, in high relief, is dead game, the fur and feathers of which are as delicately finished as they are true to nature; and below are pendent masses of fruit, with birds and other devices. The compartment adjoining displays a variety of damasks in rich and well-harmonized colours. Specimens of church ornaments, canopies, cornices, and highly-enriched massive candlesticks, with scriptural figures, attest the gorgeous style of the decorations of the French cathedrals, and surpass the more stiff and quaint forms of Pugin's mediæval court.

In the next compartment we were much pleased with Mrs. Bourgery's paintings in relief. The fruit and flowers are beautiful, although we cannot help fancying there is a certain heaviness scarcely agreeable, on a minute inspection. Some fish are much better, and may be compared with the happiest still-life works of art in the whole Exhibition.

The brothers Lechêrne, of Paris, and Messrs. Huber, supply a collection of exquisite things in *carton pierre*, which seems to be applied almost as generally as *papier mâché* in our own country.

After threading the avenue of mousseline de laine, merino, blankets, boots, and other goods, connected with clothing, we step into a large compartment on our left, filled with furniture of great magnificence.

The exquisite style of furniture-inlaying, known as *marqueterie*, is shown to great advantage in chairs, tables, and cabinets of remarkable beauty. Pretot, in particular, carries off the palm by his splendid tables. Messrs. Fourdinois' carpets and magnificent cabinet cannot fail to attract attention.

Kruger's oak cabinet is a beautiful production. It is of great height, surmounted by Cupids and superb festoons of flowers, and the panels are covered with emblems of hunting and fishing. It is in admirable taste, and is hardly surpassed even by the carved book-cases in the Austrian suite of rooms.

Towards the end of the room is a quantity of ingenious wire and iron-work. The birdcages are not equal to others in the Exhibition, but the chairs, round tables, and other furniture, all in wire, are highly creditable to the exhibitor. They are of remarkable strength as well as lightness, and would make pretty and suitable accompaniments to a conservatory, summer-house, or garden-room. They are certainly far superior to the clumsier productions in wicker, which have been adopted.

M. Mercier, of the Faubourg St. Antoine, deserves much praise for his drawing-room furniture and dressing-tables. Some of the articles are beautifully chaste and *recherché* in design.

Londonmoi and Co. exhibit a solid ebony bookcase, beautifully inlaid. To our own taste, however, ebony is best applied as a decoration. The heavy black, although an excellent relief for ivory, silver, and lighter woods, is gloomy and forbidding in appearance when used in large masses. A solid rosewood bookcase, by Johé, is more pleasing in effect, but less costly.

Before we quit the furniture, we must notice a most ingenious self-acting writing-desk. It is of very large dimensions, and is contrived to open alone by a half-turn of key, and shutting of its own accord. Underneath is a slightly-raised platform, calculated to rest the feet most comfortably while one is writing. As a piece of cabinet-work, we give it all praise; but we have written too much ourselves to believe in such *trouble-saving* apparatus as conducive to utility.

We return back to the nave through some superb china. The porcelain vases, in pale sea-green, covered with white embossed leaf ornaments, are charmingly simple and delicate. Among the Sèvres china, two great ultramarine jars are worthy of especial regard: they are extremely gorgeous; and two vases, of entirely new form, designed by M. Klagman, the sculptor, to whom we owe the beautiful figures of the Louvois fountain. The ornaments of these vases are a pair of bas-reliefs, representing the nature of the ox and horse. The horse is surrounded by four allegorical figures, typical of strength, speed, spirit, and courage. The ox, with his yoke-fellow, ploughs the land, attended by the Seasons. Close to the handles of the jars are placed two minor bas-reliefs, where a shepherd shears his sheep and herds his goats.

Next to these we must notice the dishes of fish and game. The mackerel are first-rate; and it is difficult not to believe them real. Unfortunately, like the glass fruit in Aladdin's garden, they are only ingenious imitations, worthy of high praise for the perfection of the illusion.

Passing under a handsome chandelier, by Malifat, we notice the

brothers Vierbent's collection of articles of decoration, chimney-pieces, &c., in artificial stone. M. Nast deserves much praise for his porcelain, especially for a superb vase, round which a swan twists its neck, so as to form the handle. The china ornaments, by Messrs. Jouhanneaud and Dubois, also merit commendation.

Outside, Matifal's collection of French clocks deserves praise, although, to say the truth, the specimens of this popular branch of manufacture scarcely come up to our expectations. After looking at the room full of fenders and curtain cornices, we will cross the nave and commence the opposite French department.

Erard, unquestionably the first maker of pianofortes in the world, as far as exquisite delicacy of workmanship, and clear brilliancy of tone are concerned, exhibits an instrument well worthy his great name. The exterior is superbly got up, but is less sumptuous than some others in the exhibition—Jennings and Bettridge's *papier mâché* one for instance; but its tone is faultless: clear, silvery, and bell-like in the treble, the bass is deep and sonorous. Many opportunities occur of hearing this magnificent instrument developed by first-rate performers. A collection of horns, by Sax, in the case opposite, forms a fitting companion.

In the study of anatomy, now brought to a wondrous state of excellence, it is not always expedient, or indeed practicable, to begin with actual dissections. Some popular knowledge ought at least to be gained, before practising upon real subjects. To this end, lay-figures, exhibiting the layers of muscles, the viscera, venous and arterial systems, &c., were introduced, and ingeniously contrived so as to allow of removing different layers, disclosing those underneath. Both here and in the opposite gallery, Dr. Auyoux exhibits some excellent specimens of this "anatomie élastique," well calculated to show the progress of the art in France.

Glancing at the cutlery, we must pay more attention to "J. Aubanel's superb door in cast-iron and wood, richly gilt and carved." The iron castings and bronzes, to which we are now introduced, well deserve attention, especially a group of eagles by the same *artiste*. M. Duclé's vases, and specimens of balustrades are very artistic.

Passing a group representing the affecting story of Cephalus and Procris, which is, however, scarcely equal to the subject, we come to one of the handsomest oak cabinets in the whole collection. It is by Fourdinois, and, like some others we have noticed, is illustrative of the chase. Four handsome hounds, of the full size of life, support the lower portion, which forms a handsome sideboard.

On the left-hand side are specimens of wood, and of Algerian natural productions. Two volumes of dried plants well deserve the attention of those interested in forming a *hortus siccus*.

Messrs. Barbadreuve and Co. exhibit superb specimens of bronze casting, chiefly after the productions of Ghilberti and Michael Angelo, the collection being completed by Clesinger. In mentioning this latter sculptor, we must observe that the chiselling of marble has been carried to perfection in the "Bacchante" by M. A. J. Clesinger, which is a fitting introduction to the luxuries coming from Sèvres and the Gobelins. The rounded contour of the figure shows how far the talented sculptor may trench on the ground which, in painting, Rubens made his own. This work cannot be surpassed in the delicacy of the chiselling of heads, hands, and feet, or in the list-

less grace of the attitude ; the addition of the bunch of grapes, of the ivy crown and upset tazza, were almost needless accessories.

We will just look at the rather heavy group of Hero and Leander, and then enter the room containing, nay, we may say, formed by, the massive Gobelins tapestry.

This manufactory, like that of the Sèvres china, is carried on, without regard to profit, at the expense of the government. By the hands of embroiderers, especially educated for the purpose, and selected for their talent, the works of great ancient and modern painters are copied. At one period, the Gobelins tapestry was never sold, but reserved as presents by the French sovereigns to favourites and foreign potentates. At present, it is sold, but only under certain conditions. A set of tapestry, from designs by Paul Delaroche, was lately in course of execution for the Duchess of Sutherland. The cheapest piece of tapestry exhibited is valued at a thousand pounds—a larger one at three thousand pounds.

One immense mass, on the left side of the room, forms an industrial allegory, being surrounded with medallions illustrative of various trades and professions. Opposite is a gigantic carpet in the same material, literally covering the whole side of this large compartment. Some smaller pieces of tapestry, at a little distance, are so like oil-paintings, that it is difficult to believe them needle-work. A dead Christ, and some excellent Watteau groups, deserve especial notice.

The Sèvres china, in the middle of the room, is a wondrous illustration of what artistic industry can effect, when countenanced and protected by government. The vases, services for tea and coffee, for painting and enamel, distance everything of a similar character, if we except some of the more *recherché* Dresden productions.

After Hero and Leander, we come to a rich collection of silk, perfumery, confectionary, and other articles in great perfection, but possessing little interest in a description. Turning into the music-room, a monster double bass claims our admiration. But the most ingenious thing among the collection of pianos and harmoniums, is the "*orgue de voyage*," a kind of seraphine, by Müller, so called from its capability of being packed in a box. To quote his own description : "This beautiful diminutive organ has already acquired great popularity in England. From its size and compactness, it has been called *Orgue de Voyage* in France; from its beauty, fulness of sound, and its resemblance to the human voice, its German name is *Sing Orgel*. These denominations, together with that of *Orgue expressive*, or Expressive Organ, designate the character of this beautiful instrument better than any other description could do. Although it is so admirably constructed that it can be easily folded and brought into such a narrow space that it can be carried like a common trunk from place to place, from town to country, and therefore has become the constant travelling companion of many families abroad, yet its sound is of such fulness and power that it fills even a large space, and is equally fitted for a cabinet, a drawing-room, a hall, or a chapel." It possesses the important advantage of being always in tune, and is certainly a most ingenious and amusing piece of furniture.

We now turn back, and cross to the French machinery department. Montebello contributes an ingenious machine for corking bottles, near to which are some beautifully-made metallic capsules, by Dupuis. P. Nicolas's machine for cutting the bottom of engraved rollers

for printing fabrics well deserves attention. It is a work of complicated ingenuity. Poirier's stamping and copying presses are already well known in this country.

A most curious and interesting machine for making hollow bricks (which we have mentioned elsewhere) is exhibited at work, but was not in action at the time of our visit. The force by which the clay is driven through the perforated moulds seems immense. Not far off is a pretty model of a coke-manufactory, of the neatest and soundest workmanship.

Among the tools, we shall only notice the steel and brass weaving-combs, by Harding, Coint, and others. The "deparator," by Risley; and some circular looms, by Jacquin, are among the best things exhibited in this department.

At the back are some chemical preparations, not equal, however, to other similar collections in the Exhibition. Some manures, contributed by Fouche Le Pelletier, seem to deserve attention. In a large case, H. Castelle exhibits a collection of specimens of water-proof gelatine really surprising. This delicate and tenacious material is formed into every variety of flower, leaf, and fringe, forming a superb bouquet. It is engraved, decorated with gold, and forms sheets as large as paper, and as thin and supple as gold-beater's skin. This case well merits high commendation, and we have no doubt that this manufacture will be more generally applied for purposes of *bijouterie* than it has as yet.

Passing through some ingenious arrangements connected with bell-ringing, we are again amongst machinery. The "Lahore" locomotive is a fine noble-sized engine. A large paper machine, and some blowing-machines, by Erofer; and Powel's gas moderator, are all interesting in their way.

As we are going to quit the subject of machinery, we will just notice, at greater length, two objects which possess individualization, as well as ingenuity. One is the *olarithme*, or universal calculator. It is the invention of a French engineer, M. Laur, and may be described as a universal graphic constructor and calculator, for the use of civil and military engineers, professors, geometers, and any one engaged in geodical operations in general. It unites, in a simple portable shape, all the advantages till now belonging separately to the parallel ruler, the square, the hand-compass, the protractor, the scale and sector, the sine-tables, natural for all radii, and to the multiplication tables intended for the calculation of the surfaces of geometric plans. In point of speed and exactness, and in consequence of its many applications, the *olarithme* is one of the most useful and economical instruments of precision in the practice of geodesy. It affords to any one engaged in geodesy and planimetry many advantages, by the great saving of time and expenditure, particularly in the execution of a general survey of lands made by small portions.

A curious system of locomotion is also represented, in the shape of a railroad without rails. In a similar English invention, which was exhibited some years ago, there were pairs of wheels fixed on the road at stated distances, which were to be kept in motion by stationary engines, the power being communicated by a band passing from the engine and connected with a great number of wheels. The rails were fixed to the bottom of the carriages, and were made long



enough to have always a bearing on two of the wheels at least. When the system of the wheels was put in action, the carriages were propelled by the bearing which the rails beneath had on the peripheries. One of the advantages of this plan was, that single carriages instead of trains could be started, and at very short intervals, without danger of collision. In the French modification of the invention, the principal difference consists in the means of giving motion to the wheels. Instead of connecting the series with one long endless driving-band, there are numerous short endless chains connected with the axles of only two pairs of wheels, so that the motion of one pulls the chain which propels the next. The model road exhibited is on a steep incline, for the purpose of showing that this mode of propulsion is applicable to the ascent of hills. The advantages attending this system would, it is possible, be counterbalanced by the cost of construction, by the great waste of power in turning a number of wheels when not in use, and by the liability of the mechanism to get out of order.

A fitting accompaniment to our notice of scientific and mechanical instruments, is a collection of L. Mathias, which exhibits a series of treatises on mathematics, applied mathematics, mechanism, physics, chemistry, natural sciences, agriculture, &c. It is with pleasure we perceive that similar efforts, in the shape of a judicious series of hand-books, have been lately put forth by publishers in our own country. The "arts of life" have been unaccountably neglected, and their treatment confined either to expensive and voluminous treatises, or to meagre sketches, insufficient to furnish correct notions or practical rules.

Bourdon's water-level, with self-acting alarum steam-whistle, deserves praise; but we were somewhat disappointed by the collection of optical instruments. The French have always been ingenious in this department; but the present specimens exhibited hardly come up to our preconceived ideas on the subject. The same remarks apply to the chemical and physical instruments.

Beranger's scales and balances are first-rate. So true are they, that a breath of air depresses them instantly.

In the next room, M. Baranowski's inventions deserve especial notice. They consist of a portable machine for printing, numbering, and registering tickets for railways, theatres, balls, &c., at the rate of 5,000 per hour. A number of blank cards are placed in the upper part of this machine, and then, by turning the handle, either by the hand or by steam power, the cards are delivered, one by one, ready for distribution, namely: printed from an adopted form, and numbered from 1 to 2,000, 3,000, or more. At the same time, each ticket is registered as it leaves the machine. The printing, as well as the numbering, is done with common type in different colours; the model here referred to prints in red and blue. Each ticket is further checked by marks or symbols, which may be transposed, to increase the difficulty of imitation or fraud.

Ready-reckoning machine. This apparatus is applicable to all banking, commercial, and industrial operations. To work it, one has only to turn a handle, and to push or displace one or more buttons, numbered by series. The products sought after appear immediately. These products cannot be questioned or disputed, because they are calculations made and checked beforehand. Moreover,

they are controlled by the numbers on the buttons which have been displaced. One of the models shown is for calculating workmen's wages, and another for the rates of carriage of goods or merchandise.

We shall now, keeping on the same side of the nave, commence viewing

ITALY.—This country is represented chiefly by Sardinia; but Rome and Tuscany are not idle. The first objects which strike our attention, are some exquisite tables in mosaic, of hard pebbles, on marble, or lapis-lazuli. Higher up in the room, we may notice a peculiar but interesting style of inlaying, representing the signs of the zodiac. This device has been frequently found in Chinese tables. A rich collection of lace occupies the left side of the first part of this compartment, among which we were most struck with a piece evidently intended to imitate the old-fashioned style of illumination that we find carried out in the first attempts to illustrate books. The grotesque costume, and absurd disproportion of the figures, the outrageous violations of perspective, and the gigantic size of the men as compared with the buildings, render this one of the most clever and interesting specimens of lace-work in the whole Exhibition. It is by Tessada, of Genoa.

A beautiful inlaid round table, with the favourite device above noticed, contains some ingeniously-contrived secret drawers, which certainly would elude the most cunning of thieves.

We shall not dwell upon the Genoa velvets and damasks, but merely say that they sustain the high reputation they usually possess. Turin is equally rich in the same department.

Among some very pretty and light furniture, a table and easy-chair deserve notice, for the classic Etruscan style which they present. The colours are strictly adhered to, and the design and execution are truly antique. They would be worthy companions to the imitation Etruscan vases in the gallery, which we shall hereafter have occasion to notice. A rather ingenious sofa, with a top that slides on and forms a table, is more convenient than tasteful.

Those who know how much macaroni is eaten in Italy, will be disappointed at not finding more varied specimens among the articles of food exhibited. This, as well as the department of natural productions, is by no means fully represented.

At the top of this room is a cabinet, carved in black walnut in 1845, which is almost unequalled for elegance of design and delicacy of execution.

Down the centre is a set of those anatomical preparations for which Florence is so celebrated, presented by the author to Professor Owen, arranged in glass cases. In this instance, the whole internal economy of the torpedo, magnified on a large scale, has been modelled with extraordinary fidelity. The minute blood-vessels, and the intricacies of the nervous system, are faithfully reproduced, in a manner which must be in the highest degree useful to the naturalist and to the anatomical student, without being at all revolting in appearance. A set of similar models will be found at Surgeons' Hall museum.

The mineral specimens include ornamental stone, lithographic and coloured stones in great variety, found in Tuscany, and used for

mosaic-work; specimens of alum, sulphur, copper, antimony, and quicksilver.

The vegetable specimens exhibit wheat, from which the well-known Italian pastes are made; and of that from which the straw for the bonnets known as Tuscan and Leghorn is manufactured.

Our readers probably remember, that when the late Sir Robert Peel explained the plan of his famous budget, he made efficient use of a bundle of Tuscan straw plaits, showing that such an article, varying in quality according to fineness and lightness, so easily packed in a narrow compass and concealed, would never pay or be excluded by a high duty. Some of the specimens of Tuscan plait exhibited are worth almost their weight in gold.

Again, the Tuscan oil, which in the straw-coloured Florence flask, now going out of fashion, has given a name to all the table-oil we consume, is ranged in bottles.

The animal-produce division gives us specimens of merino fleeces and silks from more than a dozen silk-manufactories.

Against the wall, on the left side from the nave, is a beautiful piece of carving in unpolished rosewood, by Giusti. The birds are beautifully executed. It appears to be designed for a mirror-frame. Near it is a picture-frame, admirably inlaid. We do not, however, think that variety of pattern or colours well calculated to set off the beauty of a picture. Plain gold frames interfere less with the effect of a painting, and are better suited to the generality of apartments.

We now come to the SCULPTURE, but wish Italy had poured forth more of her treasures in this exquisite art. Before, however, we enter upon this, we must direct attention to a group of fresh herbs and flowers, cast in bronze, and in our opinion the most wonderfully natural specimen in the whole collection. It was taken, stand and all, from nature in one single cast, and is the masterly work of Papi, of Florence.

We will briefly run over some of the most attractive of the sculptures. A noble alabaster vase, by Cherici, after the Etruscan style, is better in its way than the group of Hagar and Ishmael, by Villa, of Florence.

The "Dying Gladiator," by Costali, of the same place, is good, but not remarkable. It will not bear comparison with the well-known statue bearing that name, with which every one is familiar. Psyche, by Freccia, is very delicate and feminine.

In front of the Italian court, a Bacchanal is dancing, as if in a high state of enjoyment. Outside, in the nave, we must notice Benzoni's (of Rome) beautiful marble group of Psyche struggling to detain Cupid from carrying the gift of beauty to Venus. It is one of the prettiest of the many subjects taken from this exquisite story.

A group, by Rinaldi, representing Armida fatally wounded, is pretty; and the male disguise of this Amazon of the middle ages is well executed, without sacrificing the delicate proportions of the female form.

Two splendid marble candelabra are great ornaments to this part of the building.

Among the mosaics in the Roman department, the two Moglias are pre-eminent. Admirable views of the Coliseum and other prin-

cipal buildings at Rome, and of the Temple of Pæstum, show the perfection of this art. We must especially notice the Cavaliere Luigi Moglia's superb table, representing the most remarkable ruins of antiquity now remaining at Rome, with the allegorical illustration of the founding of Rome—Romulus and Remus sucking the wolf. The views of the gates, temples, and other buildings, are executed with an architectural fidelity quite wonderful. Domenico Moglia's view of the Roman Forum must by no means be forgotten.

T. Savalini's collection of cameos, in Pietra Dura (onyx), are the best things in the Roman part. Among the subjects is Jupiter Fulminator, or the Thunderer; original by T. Saulini: and portrait of the Rev. Dr. Townsend. Among the cameos executed in shell:—The birth of Venus; and the Hours bringing the horses to the chariot of the Sun; from bas-reliefs by John Gibson, R.A.—Mount Roveto, from the fresco of Raphael, in the Vatican—Spring, Summer, Autumn, and Winter, from bas-reliefs by Thorwaldsen—The marriage of Cupid and Psyche, from a bas-relief by Gibson—Belleroophon receiving Pegasus from Minerva, from a bas-relief by Gibson—Celestial and Terrestrial Love contending for the Soul, from a bas-relief by Gibson—The youthful Bacchus, attended by Fauns, from an antique terra-cotta, in the Museo Campana at Rome—Cupid and Hymen, from a bas-relief by Thorwaldsen. We may with justice observe, that the Pope's dominions, as a whole, cut but a poor figure. Whether from a bigoted antipathy to the enlarged and liberal views of which the Great Exhibition is so potent a representative, and which are, as has been lately shown, so thoroughly antagonistic to papal tyranny, or from the exhausted state of resources consequent on the maintenance of its dominion by the aid of a foreign power, the present Roman contributions announce an almost painful decline. The more liberal policy of the King of Sardinia is shown in its better effects, and their results in respect to commerce.

"Love Triumphant," represented by a Cupid bestriding a lion, by Angelo Bienámie, is a pretty thing enough, but yields to the mosaic illustrations of the same idea by Boschetti.

Benzoni's two groups, of "Innocence defended by Fidelity," and "Gratitude," are pretty, but want character. In the former, the dog, who is supposed to represent Fidelity, is scarcely of a size or breed qualified for very efficient service. In the latter, the idea of the boy extracting a thorn out of the animal's foot, is rather conventional. With our Gellian recollections of Androcles and the Lion, we look for something possessing more freshness and originality.

Those familiar with stage banditti have tolerable notions of the size of the boots worn by some classes of the Italians, and will therefore be quite prepared for a monstrous pair of boots, each about the width of a hat-box, worn by postilions, and occupying the most conspicuous place among the Sardinian leather goods. As we go along the back part of the Italian department, some fine specimens of solid walnut-tree, cut the reverse way of the wood, into veneers, by a new process, deserve notice.

Most conductors of orchestras have complained of the difficulty of obtaining a deep, sustained bass, especially where there is no organ, or only a small one. Jullien has introduced large pedal trumpet-pipes, with the view of remedying this defect, and various other expedients have been resorted to, but with very doubtful effect. Although

we have not had opportunity of testing its effects, we have much pleasure in directing attention to an instrument called the Baristan, by Messrs. A. and M. Ducci, of Florence. We make no apology for extracting the opinion of Giacomo Rossini. It is as follows:—

“Messrs. A. and M. Ducci, of Florence, have built an organ of diminutive size, possessing the same tone as one eight times larger. Its chief peculiarity is the position of the lower notes, which are placed in the stool on which the player is seated. These lower notes are placed in one single pipe, which gives the lowest C with 16 feet and the successive tones of the chromatic scale by means of eleven holes. To obtain the tone of a large organ, the builders, Messrs. Ducci, have altered the form and disposition of the pipes, and invented a new species of mechanism. The instrument can be easily removed as it is, or it may be taken to pieces, packed up, and carried anywhere, just like a piano. Messrs. A. and M. Ducci deserve great praise for this new instrument, which not only does honour to their ingenuity, but must expand the boundaries of art, particularly in the power it gives of uniting all the lower notes in one single pipe, which may thus lead to new mechanical improvements, and open sources of acoustic phenomena.”

Recommending our readers to pay attention to the geological and other specimens which occupy the rest of this department, we shall conduct them, first looking at a beautiful little group of Cupid visiting Psyche, into the department of—

SPAIN and PORTUGAL, which we shall unite, as they, in reality, form but one room. The Portuguese collection, like that of Spain, consists principally of natural productions, the manufacturing and industrial genius of this country being at a very low ebb. There are a few specimens of printed cottons, cloths, drills, leathers, cutlery, stationery, jewellery, &c., but none of them denote any particular amount of designing skill, or any superior order of finish. A large bouquet of artificial flowers and grass faces the spectator as he enters the Portuguese department from the nave; but the French artisans are too formidable in this style of ornamental work, and too profuse in their illustrations to give it a chance of admiration. The dealers in snuffs come out strongly, and there are numerous varieties of this pungent preparation—palpable and impalpable, common and uncommon, dry, scented, and mixed—from Lisbon. Of these the visitors unhesitatingly avail themselves, and the *noli me tangere*, inculcated so earnestly throughout the Exhibition, is entirely lost sight of here. The best show, however (wines being excluded by official behest), is that of the dried fruits. Preserved pears, figs, peaches, apricots, and the like, prettily arranged in fancy boxes, line the north-eastern side of the bay. The ordinary vegetable products are also liberally paraded; such as wheat, rice, &c., precisely similar, as a matter of course, to the neighbouring display from Spain, with which Portugal necessarily has nearly everything of the sort in common. The works of art are lamentably scarce, and what there are might well be spared. A few lithographs, a pen-and-ink drawing or two, and some wood and ivory carvings, almost unsurpassed for stiff heaviness of execution, are all that we see. In the same compartment as that occupied by Portugal, the productions and manufactures of Madeira and the Western Islands are deposited. This collection is inconsiderable

and it contains samples of the opal and lime-stone of Porto Santo, and the lignite of Madeira. A curious specimen of the porous stone peculiar to the island of Terceira, formed into a large caldrion-shaped cistern, and practically exemplifying its filtering properties in a vessel below, is the most interesting object in the centre of the area. The vegetable kingdom of Madeira, singularly prolific in all useful growths, is well illustrated in the specimens which are here provided, one of the most prominent features being a *tableau* of ferns very picturesquely arranged under a glass frame. The manufactures consist of linens and shawls, mingled with such light arts as hair and flower-workings, small cabinet toys, and wax models delineating the flowers and fruits indigenous to the island.

Spain exhibits some good specimens of cutlery, especially in the files and cast-iron work from Barcelona. The natural productions of Spain, which are far richer than its means of applying them, are most extensively displayed in its minerals, which are of the most varied description, and in other hands might become the sources of vast national wealth. The recent move made by English capitalists in mining speculations has been partially extended to this richly-endowed country, and the specimens of native ores which the Exhibition supplies will consequently attract great and earnest attention. The directors and inspectors of the leading mines have submitted a great variety of specimens. Granada sends samples of the lead which has hitherto been the staple of its commerce in this particular department. There are also specimens of the quicksilver of La Mancha, a district long celebrated for its mineral riches. There are numerous specimens of argentiferous ores, and the samples of tin, copper, antimony, iron, &c., are most abundant. The Royal Library of Madrid exhibits a curious collection of various marbles, in the production of which Spain enjoys an eminent distinction; and in the neighbourhood of this display, also enriched by a series from Cordoba, there are some fine specimens of rock and other salts. The agricultural produce of Spain is liberally represented. Of the wheat of this country, said to be among the finest in the world, there are many samples, besides maize, rice, barley, beans, chestnuts, &c. Dried fruits of all kinds are exhibited; as also honeys, oils, flax, and other produce. The wools and silks are extremely beautiful. Hanging upon the entrance of the bay is a fine specimen of the plant *lagetta lintearia*, showing the textile substance of the interior bark, as well as the cord made from the same. In this section there are also a variety of ropes, mattings, and the like, made from the fibres of the palm and majagur; as well as an extensive collection of the rushes, or grasses, used in manufactures. We may more particularly notice a fine muslin dress, from the fibre of the pine-apple, embroidered richly by Signora Margarita, of Manila. The domestic trades present few objects of interest, for, notwithstanding the opportunities which Spain has, not only from her abundance of wool and silk at home, but from the extent of her colonial produce, her manufacturing development has always been in a poor and unthriving condition. Such industry as the country possesses is, however, shown in its silks, damasks, velvets, laces, muslins, woollen cloths, veils, &c., from Valentia, Valladolid, Seville, Andalusia, and other places, while the blonde mantillas of Barcelona and elsewhere are of too national

and distinctive a character not to be put prominently forward. Specimens of the tanning, which is carried on very extensively in the northern provinces of Spain; of the soaps, &c., of Malaga; of the saddlery, ironmongery, and bronzes of Madrid; of the pavement-tiles of Segovia; of the straw manufactures of Valencia, &c., are numerous, and detain the visitor a few minutes; but they more or less exemplify the national inferiority, and challenge but little compliment.

Spain, always famous for its tobacco, is well represented in that department, and a collection of extensive Cabanas, sent by Benson, of Oxford-street, is a refreshing sight to the smoker. Along the wall is a large case filled with rather nice specimens, including fans, articles in embossed velvet, laces, &c. One model, by Maury, of Madrid, representing an incident at a bull-fight, well deserves our commendations, which we, however, give more heartily to the splendid models of portions of the Alhambra. Few of our readers have not some idea of the beautiful carvings and arabesques, which have formed the basis of so many decorations in carved work and colours; but these minute models deserve the highest praise for their delicate accuracy. They are the best of the Spanish works of art.

Mata Aguilera, of Madrid, contributes an excellent illustration of the favourite sports of the Spaniards, in the shape of a model of a bull-fight, with 4,000 figures carved in wood. While we allow every praise to this ingenious model as a work of painstaking ingenuity, we cannot forbear, in moralizing spirit, comparing the "fine old times," when Queen Elizabeth and the Court went to see "Sacker-son let loose," or, in plainer words, attended a bear-baiting as the fashionable amusement of the day. Spain is just as advanced as England was two hundred years ago!

Perez, of Barcelona, exhibits an octagonal table of inlaid mosaic, in wood, containing three million of pieces; the arms of England alone, in a space of 3 inches by 2 inches, containing fifty-three thousand! This is a wonderful instance of success in a manufacture to which the Spaniards had hitherto paid little attention.

Don José Galligos's monster guitar, or "guitarpa," combining two octaves more than those at present in use, will interest those who are attached to this truly Spanish instrument, which will always hold a favourite position as an accompaniment to the voice. We give his own description of this ingenious and really orchestral guitar:—

"This instrument comprises the harp, guitar, and violoncello. It has thirty-five strings, twenty-six of which, by means of twenty-one pegs, act upon the harp part, producing in their full extent the diatonic and chromatic scales. By means of the said pegs, all the major and minor keys are changed at pleasure with the greatest rapidity and purity. Six strings belong to the part of the Spanish guitar, in the centre of the instrument. The violoncello part, for the pizzicato, has three silver strings, which, being acted on by eighteen pegs, produce the fundamental bass which the established key requires. The pedestal, a quadripode, which supports this instrument, imitates the principal articulations of the human body, counterbalancing with great power the material weight and lever force of the instrument, which turns in all directions, and can consequently be managed freely by the player either sitting or standing:

The originality of this ingenious mechanism reduces this instrument, with great regularity and symmetry, to the smallest portable compass."

Just as we come to the outside stands a superb tabernacle, intended for the cathedral at Madrid, and designed by Moratilli. It is upwards of six feet high, and is of massive gold, with silver ornaments and figures. At the base are four kneeling angels, of large size, in dead silver, and a beautiful copy, in the same material, of the Last Supper. Above are the four Evangelists, with their appropriate emblems. The central compartment at the top, in which the host is displayed, is surrounded with large diamonds; the rays and stars diverging from it are also studded with diamonds; and surmounting the entire is a cross, composed of amethysts in transparent setting, encircled with diamonds. As a piece of artistic workmanship, apart from its value, which is said to be £17,000, it is well worth the inspection of all who admire judicious arrangement and grouping, and exquisite chasing.

Among some very admirable things outside, we must notice a piece of "lady's work," in the shape of the Spanish arms, excellently embroidered on velvet, by Donna Rosa Gilart, of Madrid. Some baby frocks and pincushions, elaborately decorated with lace-work, will be agreeably suggestive of "interesting events in families."

A richly-embroidered veil, covered with flowers in brilliant colours and exquisite needlework, gives a good idea of sumptuous costume in Spain, although by no means equal to many similar English specimens. Some superb pistols, decorated in an Alhambra-like style of ornament, are a natural introduction to the renowned "Toledo" blades, exhibited here in a pair of rapiers,—one of them, as to handle and sheath, fashioned into the shape of a silver serpent. When sheathed, it forms a complete circle; and when drawn, such is the perfection of the tempered steel, it straightens at once. Then there are all sorts of deadly daggers, with handles of wonderful magnificence. But the gems of the case of arms are two pair of pistols, in wrought iron, damascened over a gold ground, worked into fantastic figures and forms, as delicate as filagree, from the butt to the muzzle: not a single hair's breadth is unornamented—they are perfectly wonderful; we have never seen anything in this country, or in France, like them: it almost reminds one of Benevenuto Cellini's work. There is also a metal book-cover, intended to hold a title of nobility in the same style of incrustation of gold and silver on wrought iron.

We must now convey our reader to the countries occupying the rest of this side, before we come to the transept. To our mind, they are so insufficiently represented that there will be little to delay us. Visitors seem to be of the same opinion.

TURKEY AND EGYPT send a number of rugs and carpets, but we have seen so many better in our own dining-rooms, that we cannot afford even comparative admiration. In the space at the back, leading into the transept, there is a fairish collection of tigers' skins, silks, and other articles of natural produce. In the next room, abutting on the transept, are a lot of clumsy spoons, not unlike the Welsh wooden ones, but made of mother-of-pearl, ebony, &c. Some pipes, a few models of boats, cymbals, paltry china and glass, pipes and tobacco, which are, perhaps, the best things in the place.



Within the tent which forms the chief room of the Egyptian-Turkish department, and which is fitted up with tolerable taste, the centre case exhibits some handsome clothing embroidered in gold, and some silks and muslins similarly decorated. Around the room are various articles of clothing, more remarkable for the substantial goodness of the fabric than the taste of its designs. We must especially point out the delicate silken *chemise*, almost transparent, yet of strength and tenacity unaccountable in such gauze-like material.

Just looking at a handsome Palicar dress, embroidered in gold, and consisting of doulama, fermeli (upper jacket), pair of gaiters, pair of silk garters; fez, with gold tassel; silk sash, fustenella, shirt, pair of trousers, and pair of red morocco shoes, which is almost the only noticeable thing in the little space devoted to Greece, we continue Turkey on the outside, in the nave.

A rich case of shawls is well worthy of notice; and some rich saddles, remarkably flat, however, in the seat, and some finely-ornamented guns, in a corner, introduce us to another collection of Turkish-Egyptian articles of costume, especially some sumptuously-embroidered slippers, as impracticably small as the saddles are large.

On a table lies a large slab of beautiful yellow alabaster. A mosque has been built lately in Cairo of this sumptuous material. On the alabaster slab stands a coffee-pot, which looks rather like dull block tin, surrounded by a swarm of little egg-cups, reversed: on turning them up, it is found that the metal is not tin but silver.

One of the walls is adorned with fans of peacocks' feathers, very like English fire-screens; but these fans in Egypt are not mere ornaments, but genuine necessities, and so are the fly-flappers of grass.

Among the few raw materials exhibited, are cotton, cassia, and a variety of drugs and timber.

PERSIA is but meagre in its contributions. What there are, are chiefly taken from private collections in this country. They embrace some specimens of costume and trifles appertaining to domestic use, and one or two books, handsomely decorated in the well-known style. We may specify a little sitting figure of a princess of the Druses, which deserves notice as presenting an example of the Tantar, or horn, worn by the females of the East on their heads, and to which allusion is sometimes made in Scripture.

F. Ede and Son have contributed four Persian panels, containing the following subjects:—

1. Agis, an old king of Persia, having no male issue, and an only daughter, is represented buying a neighbouring chief, named Yussuff, to marry him to his daughter Zulika, thereby retaining the throne in his own family.

2. The old king Agis making a feast to his intended son-in-law, who stands on one side while the women dance.

3. The old king's daughter Zulika in her harem.

4. Yussuff becomes king by his marriage, and is represented at dinner with his courtiers.

We now cross over, and keeping along the transept on the other side of the nave, we commence with

CHINA.—China is tolerable, but makes no great show. There are many better private collections in London, and more *recherché* articles in many drawing-rooms. A pretty mother-of-pearl pagoda; a large mandarin in a case, in his dress boots, with the quaint inscription, “The man in boots knows not the man in shoes,” or, in other words, “Jack in office barks at dogs out of office,” introduce us to a collection of natural and domestic productions, among which we may especially notice the series of materials used in the manufacture of porcelain, contributed through the Board of Trade, and forwarded by H. M. consul, Shanghai. These include not only the china-clay, or kaolin, but also the china-stone, and the different earths and pigments used for various purposes, whether mixing, glazing, or colouring, in the great porcelain-works of the East. No less than seventy packets are exhibited, containing samples of colours and colouring material employed in producing the various tints.

Perhaps the most curious thing in the Chinese collection is the original address, bearing the signatures of seven hundred and seventy-six merchants, presented to his Excellency Hwang, on his appointment to the office of Deputy-Governor of Canton, in the reign of the Emperor Keen Lung, in the year 1720. It measures nearly 8 feet in length and 6 feet in width, and contains 2,328 Chinese characters, finely worked in gold on silk, and is lined with Chinese embossed velvet, with a gold border. Mr. Thoms, the printer, of Warwick-square, who exhibits this curiosity, has sent an English translation of it, from which we make the following extracts:—

“We, the undersigned, respectfully approach and pray that a blessing may descend on Tsincho (private name), our literary father Hwang, who, being of noble descent, may glory and honour attend him. The poets say that the tung-tree, when agitated with the golden wind, not only sends forth its fragrance, but becomes more luxuriant, and with age more splendid and glorious. Such may be said of your Excellency; for when you filled inferior appointments, one might as well endeavour to stop the ascent of vapour, the motion of the clouds, or pull the planets out of their courses, as to impede the promotion of you, our minister.” \* \* \* \*

“Unexpectedly you were appointed to preside over the western district of the city (the part where Europeans reside), when the respectable and honourable inhabitants assembled before your door, who resembled a covey of sparrows which hop to and fro, anxious to give expression to their feelings, enjoyed what they had long desired, to offer you their congratulations on your coming among them; and now they thus address you.

“We mean people, have long dreaded covetous magistrates, who have been compared to voracious tigers with wings. But brighter prospects now shine forth, for the felicitous Lin, with its horn, has come among us; while the Fung, the king of the birds, has also built his nest. Having both the Lin and the Fung, we know we shall have that which is just and correct.” \* \* \* \*

“The autumn is luxuriant, and the sun shines in full splendour. At such a time well might the man of letters, and the man that fills an important station, cement themselves together to offer praise to

the Divine Powers. While the husbandman is singing in his field, the mechanic happy in his shop, and the merchant delighted with his speculations, the sire will beat time as the children dance and are regaled with a cup of tea or a glass of pleasant wine; and the eyes of the youthful will sparkle as they ascend the stately hall—for all mankind have a heart."

TUNIS is far more interesting. From the transept we pass over some rough but very comfortable mattings, quite a relief after the continuity of boards over which we have been parading. A splendid case of cloths and dresses, embroidered in gold, well deserves notice.

In an inner room appertaining to CHINA, there is an interesting model of a boat for opium smuggling. We need hardly remind our readers of the dangers to which those who carry on this illicit traffic are continually exposed. Some beautiful ivory boxes, a box of camphor-wood, which, by its strong odour, is calculated to exclude moths; some chairs of bamboo, of amazing strength, a lacquer table, inlaid with mother-of-pearl, a superb pagoda in the centre, some specimens of the edible birds' nests, so much talked of, and of the "Beche de Mer," all deserve notice. We must not forget an ingenious, but somewhat impracticable, pump, on the tread-wheel principle.

Among the most interesting of the Tunis productions, a little to the right, and in the rear of the central Chinese room, is a real Arab's tent, of black camel's hair, a stout, useful material. The interior of it is decorated appropriately with the skins of lions, leopards, antelopes, and wild goats. Within it are arranged rude husbandry tools, hay-forks, such as schoolboys make of a forked stick. There are also the Arab musical instruments—a fiddle with two strings, and a guitar, or African banjo. Candles of brown wax, of a taper, crooked, dip shape, hang among other household treasures. We may particularly notice some straw hats, literally as large round the brim as a coach-wheel, and so wide in the head, that we presume a turban or cap must go inside.

Next to China are exhibited a few specimens of products of various countries of South America. Of these, Chili has sent a lump of gold ore, weighing 3 cwt., and a mass of native silver—one of the largest hitherto seen in this country, the value of which amounts to £500 sterling. The appearance of this mass of native silver is peculiar and interesting, the whole consisting of numerous plates or layers, not apparently connected with each other, except by simple contact. It appears to have formed part of a large mass. The rich copper ores from Chili are also well worthy of notice.

SWITZERLAND will complete our studies in this part of the building. Passing by the grand pianofortes at the entrance, and going under the staircase, we enter a collection of hides, tanned and untanned, cordage, and other similar matter. The "musical boxes" do not pass unrepresented, nor does the national weapon, the bow, cut an indifferent figure. The muslin curtains, by Messrs. Eugster, Appenzell, and C. Holderegger, St. Gall, deserve great praise.

The glass cases containing the display of ribands extend along the entire length of one of the compartments—there being no less than 120 small compartments, each displaying four different species of

riband, all of rich and beautiful patterns; so that we have here nearly 500 different patterns, which the eye can at once take in an survey. The textile fabrics in silk, satin, linens, and muslins, are of the greatest delicacy and finish—the silks from the Zurich manufactures being peculiarly soft, brilliant, and gossamer-like, have a fine effect ranged along the west side of one of the compartments.

The cambric embroideries and lace worked by hand are admitted to be unrivalled; and some ladies' dresses are beautiful enough to compete with the more expensive lace of Belgium or Nottingham. The amount of labour bestowed upon some of the finer descriptions is incredible. The introduction of flowers, fruit, and foliage in colours in skirts, window-curtains, and coverlets, has the most elegant effect. An embroidered curtain and bed-cover, in muslin and silk, with pictures wrought in silk—the centre the ever-recurring figure of William Tell escaping in the boat—and the arms of several cantons, is a fine specimen of the perfection to which this description of work has been brought. The Swiss muslins and prints, the strong fabric and permanent colours of which have rendered them so long favourites in this country for ladies' morning dresses, are shown here in great variety of pattern and texture, as well as the coarser cloths worn by the Swiss peasantry, including handkerchiefs, shawls, tartans, scarfs, gingham, &c.

We must not omit the wood carvings and models, which lie towards the nave. A most superb cabinet writing-desk and work-table combined, is a most elaborate specimen of this art. The figures in relief, illustrating the rustic economy and rural life of the cantons, are executed with the most minute delicacy, and the open tracery of the framework is admirable. The machinery, however, for opening and folding up the desk is very stiff and complicated, and the workmanship would have been much better without it. Near this *chef-d'œuvre* is a well-executed figure of Father Girard, a Franciscan friar, solid and massive, with the expression of the countenance well preserved: and in an amusingly marked contrast is a light and fragile little lady's work-basket carved in maple-wood, equally remarkable for its delicacy and minuteness. Among the models exhibited is a large one of the Cathedral of Strasburg, beautifully executed in card-paper by a working bookbinder of Zurich with a penknife. It stands about five feet high, and occupied the patient and ingenious workman three years. A model in relief of the mountains of Appenzell, including a surface of 130 square miles, and several other models of various parts of Switzerland, will be found in the same compartment. Wirtz, of Berne, exhibits some work-tables, which are extremely elegant. One is of white wood, and has in the centre a painting of Tell's chapel, and the costumes of the twenty-two cantons set round in medallions. Another has a view of the celebrated Handekfall. There are also some work-boxes in carved maple and white wood, with the Alpine rose on the lid; one of ewe-tree-wood, with a group of flowers and a garden rose, the foliage of which has all the minuteness and delicacy of nature. Salad-spoons and forks, nut-crackers, paper-folders and cutters, drinking-cups, and a thousand other ingenious trifles, display the good taste and industry of the Swiss peasantry.

A jewel-case in nut-tree-wood must not be passed over. It is ornamented with figures in the costume of the canton of Appenzell, William Tell shooting the apple off his son's head, and other repre-

representations of Swiss character and events. A model of the fountain erected in the market-place of Nuremberg, in Bavaria, is singular for the fidelity with which the minute figures surrounding it are carved.

We shall now convey our reader to the galleries, commencing from the eastern corner of the—

### NORTH-EAST GALLERY,

CLASS 24, marked G in plan.—Here we have a perfect picture-gallery, in stained glass, which is too much neglected by visitors. We can only direct attention to a few of the more striking specimens.

After passing a representation of the Wise men offering their gifts to Christ, as well as several specimens from Ballantyne and Allan, of Edinburgh, we notice the figure of Saint George and the Dragon, standing under a Gothic canopy of the Decorated period. Some of the colours are exceedingly rich, but it has on the whole rather a heavy appearance. The next specimen, by Gibbs, of Camden Town, of a Norman window, a decorated Gothic portion of a window, as well as four compartments of highly-finished pictorial glass, has a much lighter and more pleasing appearance. Wailes, of Newcastle-on-Tyne, exhibits a large quantity; one window representing Our Saviour in the centre, and the Four Evangelists at the sides, is very fine and rich in its colouring. From Hetley and Co.'s, of Soho-square, we have several specimens; one consists of six medallions, illustrating events in the life of Our Saviour; a large centre window representing the "Ascension," which is exceedingly well painted, and is remarkable from the large squares on which the subject is depicted. The same firm also exhibit some groups of flowers;—it was for the latter specimen that they received a silver medal from the Society of Arts; they are admirably painted, and show great talent. A very beautiful window, designed and executed by Mr. J. Gibson, of Newcastle, we next notice. In its arrangement it comprises five circles: the upper one represents the *Agnus Dei*, within a glory; the others are illustrative of the Annunciation, the Holy Family, and the Adoration of the Magi. The colouring of the whole is very rich and harmonious; the tracery between the circles is principally ruby or blue, and is very beautifully designed.

Hall and Son, of Bristol, show some very fine specimens of ornamental cut glass; near to which are paintings on muslin, in imitation of glass, exhibited by Garnet, of Leeds. The illusion is extremely perfect, and, viewed by the side of the others, it is at first difficult to discern the difference. Geylins, of Austria, exhibits some very fine specimens. For execution, they will bear comparison with anything of the kind in the Exhibition. They respectively represent a Winter Landscape in Upper Austria, a view of Johannisberg, on the Rhine, and the Town-gate of Bremitz, in Hungary. We heartily recommend our readers' attention to these cabinet pictures on glass; for such they really are, both in delicacy of colour and effect.

J. F. Pluys, of Mecklin, contributes some historical church windows, with medallions tinted in sopra and yellows, and a series of figures richly equipped, with armorial bearings, beneath rich stalls, as well as a drawing from Rubens.

From Laurent, Gysell, and Co., of Paris, we have also fine speci-

mens. The two armorial bearings, in the style of the 17th century, are well worth examining.

Messrs. Powell and Sons, of Whitefriars, show the effects produced by pressed glass, afterwards filled in by other colours, and then ground off. Windows thus produced are exceedingly effective. But it must be acknowledged that the gem of this collection is by Mr. Baillie, of Cumberland-market, who has executed upon glass a copy of Mr. Wood's picture, "Shakspeare reading one of his plays to Queen Elizabeth," in a style that shows great proficiency in an art hitherto but little practised in this country. The brilliancy of the colours, and the delicacy of the shadowing, especially in the flesh-tints, render the work quite a curiosity in its way, while the ingenuity displayed in arranging the iron frame, so as to break the details of the picture as little as possible, is highly to be commended. The satin dress of Queen Elizabeth is softness itself.

Messrs. Chance, Brothers, and Co., of Birmingham, whom the reader will recollect had the supplying of all the glass used in the erection of the "Crystal Palace," exhibit some beautiful painted windows, as well as some leaded work, with medallions, and ornamented work of the early Gothic style, as well as that of the 14th century. Some flowers, painted and enamelled on a large plate of glass, the effect of which has been obtained by the glass having been burnt in a kiln four times.

Turning to the right, we now notice the NORTH TRANSEPT GALLERY.

MISCELLANIES, CLASS 29.—The first object represents a deer just shot, falling dead. It is admirably conceived; and, when we compare the animated ferocity of the dog who stands over it, we are sensible of the appropriateness of its title, "Life and Death."

The "Dodo," a bird of the duck species, but utterly extinct, has been traditionally handed down to us chiefly through the medium of the painting now in the British Museum. All vestiges of this animal in a living state, appear to have disappeared from the earth; but Mr. Bartlet has displayed much ingenuity in restoring it in a stuffed form. Cleverly combining the feathers of other birds, he has contrived to bring before us an excellent "dead Dodo," with the curious accompanying paradox of its never having been alive. We remember when Linnæus was driven out of Leyden for proving a dragon, exhibited by some adventurers, to be a heterodox compound of fish-skins and birds' claws. Mr. Bartlet might have attempted a similar imposition with better success.

Mark Clapshaw, whose periodical visits to the universities, ever accompanied by a copious collection of bats, balls, stumps, and other cricketing paraphernalia, comes out strong in this line, and exhibits a well-filled case, calculated to excite the longings of many a schoolboy.

Leadbeater, of Brewer-street, here exhibits a case of stuffed birds, chiefly remarkable for the exquisite varieties of moss introduced. We must more particularly notice, as a worthy accompaniment to M. Plocquot's museum in the Zollverein, an amusing group, representing a quantity of small birds "mobbing the owl." They are extremely life-like, well arranged, and determinately mischievous, while the stupid look of the owl, and the air of offended dignity with which he regards the intruders, is particularly amusing. There are

also some more groups, by Williams, as well as from Harbour, of Reading, well worth examination.

A large stand, by Mechi is enough to make the mouth of a dandy water. Every arrangement for the production, nutrition, modification, clipping, cutting, twisting, twirling, and other revolutions through which human hair, whether in the shape of beard, whisker, moustache, imperial, straight clerical, short parochial, curls, ringlets, plaits, or whatever else can be even dreamt of, is so richly provided for, that we cannot help admiration.

Some new styles for parasols, shown by Hargrove, Harrison, and Co., of Wood-street, would be more useful if they were out of the cases, as the sun bears hard upon this part of the building.

A variety of angling tackle, from London, Dublin, and Carlisle, deserves notice; but it has been said, that the flies are generally more pretty to look at than sure to kill. Right above the London rods is placed a portrait of a prodigious trout,  $16\frac{1}{2}$  lbs. weight, said to have been killed in the Thames. Beside the shining show of angling material, we have the modest models of a fishing-boat and tackle, by Alexander Birnie, Peterhead. Pulman, of Crewkerne, Somerset, makes a good display of artificial flies for river fishing, to which we recommend the attention of all given to the *ars piscatoria*.

We next notice Milton's apiarian repository. The hives are in the form of a house, appropriately styled "the house of industry." The windows of it are of glass, and on opening the shutters, we can see the numerous bees in full employment, in their own cells.

Messrs. Rowland, Ede, and Rimmel display much taste in some little fountains amid artificial flowers; especially Mr. Rimmel, of Gerrard-street, Soho, who exhibits, in the midst of a winter garden of artificial flowers, a graceful "Flora's Fountain," which pours out a supply of toilet vinegar; a very grateful and refreshing perfume, of which lady passers-by may freely avail themselves. The fountain is kept in motion by the pressure of a weight, and wound up like a lamp. It is well suited for perfuming and cooling apartments.

Turning round to the left is Messrs. Spurins's collection of toys, which is a conspicuous centre of attraction, and rivals anything of the kind even in the German department. The best thing is a complete model of a farm-house, in which several of the things are in motion. The sails of the mill are turning round, a woman feeding the poultry shakes the basket of grain, some men threshing in the barn, and others in the stack-yard grinding, are also actively in motion; another party are cutting hay for the cattle and pumping water for the cows. A horse in a mill is turning round, and every variety of horse, pig, and cow, that may be seen in a real farm-yard is here given with most picturesque and amusing exactness.

Next to it is, perhaps, the more attractive group of Gulliver at Lilliput. Gulliver is here represented as having just awakened from a sleep, and his yawning, listless appearance is amusingly heightened by the quaint costume of the time, which is correctly realized. During his sleep the entire Lilliputian army, with the king at their head, have come out, and have bound "the man-mountain" with thread-like cords, in their opinion, most secure. One of the soldiers (who are completely covering the aroused sleeper), more malicious than the rest, has tickled Gulliver's nasal organ with

a needle-like spear. This causes the monster to sneeze in a voice of thunder, at which report the entire army are struck with panic, and scuffle away down the hilly country formed by the legs and chest of the "man-mountain." One little wretch has fallen into his waistcoat pocket, others have made a tumble only to be surpassed at Greenwich Fair. The hundreds of little figures, executed with remarkable quaintness and delicacy, their varied costumes, and the agility with which they are invested, render "Gulliver in Lilliput" quite a work of art as well as an amusing toy. Were Dean Swift alive, he would be not a little pleased to witness so happy a realization of his most ingenious conception. Messrs. Spurins, of New Bond-street, who have contributed these two last-mentioned models, deserve the highest commendation for the combination of industrious ingenuity with judicious comprehension of a subject. Nothing in the whole Exhibition "draws" so well.

A large collection, in a case, consisting of raw produce imported into Liverpool during the last five years, showing their mercantile and scientific uses, is well arranged by Archer, and will be interesting to those who have watched the gradual progress of this important seaport town.

More stuffed birds and a dog and toad from Mexico, deserve notice. The toad is one of such dimensions that, although we no longer believe in its venom, we had rather not meet it in a bye-lane. The dog seems to be of the same opinion. This animal, which is a miserable little ungrown wretch of five years old, reminds one of the prince's wish for a dog to go through a ring. A large bird, shot in Windsor Park, is a good sportsman's curiosity.

Here are also some handsome cases, contributed by Messrs. Asprey, of Bond-street, and Lenchars, of Piccadilly, containing beautifully-mounted dressing-cases, workboxes, writing-desks, and paraphernalia. We must especially notice a superb dressing-case, valued at 300 guineas, and a writing-case with doors of carved sandal-wood.

Gunter's bride-cake we especially recommend to "persons about to marry." A clever Italian artist, M. Conté, has been employed to design it, and to model some elegant figures of Cupid and Hymen, which decorate the base and support the cornice. Beautiful vases of flowers surround another highly-ornamented pedestal, on which stand some Cupids, supporting a basket of flowers. It is a most *recherché* work, and reflects great credit on the prince of pastry.

Models of dolls, by Montanari, the accomplished modeller of the Mexican figures, of which we have already spoken, are the prettiest things of the kind. One of them, nursing a baby in the most maternal style, is quite "a nice woman." There is the usual number of prettily-dressed young ladies, and four national dolls, one of which, a mulatto Indian, is capital. They respectively illustrate Europe, Asia, Africa, and America.

Some comical carving and basket-work, sent by "Christian" Esquimaux, at the Moravian mission settlements, and a copious collection of children's toys, carry us on to the—

CENTRAL NORTH GALLERY.—EASTERN QUARTER.—Turning round, commencing at the east corner of the transept, marked H in our plan, Fisher's flowers and feathers claim our attention. They are more particularly interesting from their exhibiting plants purely



British. The imitation of hawthorn, or May, is exquisite, and completely defies us discovering that it is not natural.

Another case by A. and G. Gatti, in which is the sweet pea, made from white muslin and velvet, and some flowers made of paper, with a collection of preparations for the study of this elegant art, deserves notice.

Foster, Son, and Duncan also contribute articles used for the manufacture of artificial flowers, and likewise the calico used in the process of constructing a rose, cut in the requisite shapes.

After passing the wax flowers by Strickland and various others, we notice the glass orchid-house, by J. and H. Mintorn, not merely on account of the wonderful truthfulness of their most beautiful wax flowers, which can only be distinguished from their originals by the touch or smell, but because the magnificent *Victoria regia* is there as the principal subject of the artist's skill in flower sculpture. It is shown in its different phases of floral growth, from the great bristly bud to the luxuriant opening of its pure white petals, and the full-blown flower in all its exquisite variation of tint and form, with its pink coronet-shaped centre. Sections only of two of the eighteen enormous circular leaves which surround the plant at Sion have been introduced, as the immense space they would require could not be spared. This queen of flowers has, upon this occasion, a peculiar and extrinsic claim to attention. It was owing to its discovery on the banks of the Amazon, four years ago, and its introduction into this country, that Mr. Paxton's ingenuity was brought into play in the construction of a glass house of sufficient dimensions for its full development; and it was owing to his successful experiments in the construction of this house at Chatsworth, that he conceived the idea of the Glass Palace of 1851. We must also, among the specimens of cut flowers exhibited by the same parties, point to the superb imitations of mignonnette, in which the apparent difficulty of the subject is completely got over by the skill of the artist. The Duke of Wellington paid a well-merited compliment when he insisted on removing the glass case, to be certain they really were imitations.

Two brass bedsteads, one decorated with a coronet, are from Spain, and are more elegant than most of the Spanish articles below.

Some large pipes and Porte cigars, in white talc, beautifully carved and ornamented, by Strauss, of Turin, deserve a word of praise.

Some beautiful specimens of filagree-work, one a figure of Christopher Columbus, on a pedestal, is executed with great taste and skill, as well as another, by Lollo, of Genoa, of a monumental column in silver filagree-work of the Composite order. It is surrounded by an enclosure, and is raised on a pedestal, on the principal front of which is the effigy of Queen Victoria, to indicate that the epoch of the Exhibition was in her reign. On the sides, in the midst of trophies of the English flag, are the dates to mark the year and the day of the opening of the Exhibition itself. On the fourth side is engraved "Mano Genovese," a motto expressive of the homage offered by Genoese industry to the promoters of the universal arts. The sea-horses resting on the angles of the pedestal, the rostri and the anchors on those of the capital, demonstrate that a nation eminently maritime is treated of. The garlands which ornament the entablature of the pedestal, held up by the tails of the sea-horses, represent the

flourishing state of England. The globe raised on the capital, sustained by bars marking the various parts of the world, indicates the precise geographical position of London, from which a figure of Fame, spreading her wings, having in her right hand a trumpet, and bearing in her left a flag, with the inscription "Esposizione Inglese," is in the act of announcing to the world the great festival of the industrial community.

A finely-ornamented bronze shield, from Liege, with St. George and the Dragon in the centre, and surrounded by superb arabesque ornaments. It is by Fallorse, of Liege, and the decorations are produced by cutting the surface away into the various forms required, and inlaying it with gold and silver.

Some specimens of Brussels lace, on a full-length female figure, are exhibited to great advantage. A lady so attired would almost carry her portion on her person. The other specimens of lace of the same celebrated manufacture are of great beauty and variety. We may particularly notice some imported by Messrs. Groucock, Copestake, and Moore.

We must not forget a pocket-handkerchief, distinguished by the difficulty of working the ground and pattern together with the needle. The finest linen thread that could be made was used. In the corners of it are initials of her Majesty, the arms of England, and devices representative of industry, shipping, &c.

Three magnificent figures, respectively representing the Archbishop of Paris, who was shot during the last French Revolution; Fenelon, the amiable Archbishop of Cambrai, and author of "Telemachus;" and Thomas A'Beckett, the so-called martyr of Canterbury, arrayed in most magnificently-tawdry episcopal robes, are much more fit for the exhibition in Baker-street than the Exhibition in Hyde Park. We have little doubt that Messrs. Tussaud are on the look-out.

The Belgian epaulettes, some of them richly decorated in gold and silver, well deserve notice. The cords, sword-tassels, and other military articles, are very varied and elegant. The whole are contributed by F. Noel, of Louvain.

M. Hanicq, who is well known throughout Europe for the taste he displays in Catholic devotional works, as well as for the sumptuous character of their style, furnishes many of the best he has executed, arranged in a novel manner, which contributes to the general effect of the compartment in which they are placed.

Austria exhibits some superb flowered carpets, hung from the roof; some splendid pianos, one of which is beautifully ornamented in mosaic-work of wood, and deserves a word of praise.

Hoffreister, of Coburg, Prussia, exhibits a magnificent Gothic sideboard, in two stories, the summit of which resembles the stalls of a cathedral, the panels of it being finely carved with subjects illustrative of the chase. Some fine arm-chairs, of the same wood, covered with rich brown plush, accompany it.

The "Philharmonic Chandelier," by Fleishmann, of Sonneberg, is a most amusing affair. The top of it exhibits M. Jullien, in his conventional white waistcoat, burly personage, and good-natured enthusiasm, in the act of "conducting" most energetically the band, the chief members of which are sitting round the lower part of the chandelier. It is a capital thing, and the likenesses are very good.

The "Paxton," an elegant ornament, consisting of light iron

branches supporting a stand of looking-glass, with some pretty figures below, is intended as a tribute of respect and admiration to the ingenious architect of the Crystal Palace.

Wirth, of Stuttgart, exhibits a handsome dressing and writing table, and a wardrobe, with carved ornaments, modelled by the exhibitor. The walls about this part exhibit a variety of patterns of paper for walls, from Wurtemberg.

Schievelbein, of Berlin, sends an octagonal table, mosaiced in rich Indian woods, with some samples of the woods. Some good plaster figures; and dogs', stags', and birds' heads, adapted for brackets, bronzed and gilt, also deserve notice.

We have mentioned a piece of sculpture for a frieze, by M. Engelhard, of Hamburg, which is placed down stairs in the nave. Here we have his own spirited crayon sketches, from which it was taken. We must also mention M. Schroder's ingenious figures for simplifying the sciences of mathematics and perspective.

A very large model of the Cathedral of Magdeburg, by Boesche, made of lime-tree wood, deserves praise as a model, although we cannot say much for the architecture of the cathedral. It has magnitude, without grace or proportion.

Coming into the American department, we find some more illustrations of the uses to which India-rubber is applied, by Moulton, Bradford. On an India-rubber handkerchief is an excellent copy of Count D'Orsay's portrait of her Majesty on horseback, and another of the "Swedish Nightingale."

Taylor's transparent soap makes a conspicuous display in this part. Among the most remarkable specimens is a church window, in elaborate pattern, entirely composed of pieces of this soap, five or six times thicker than ordinary stained glass. A bust of the Queen, and of Washington, in soap, are also very capital efforts of ingenuity.

At the end, we may give a word of praise to Norwood's specimens of decorations for walls. The paper, in rich panels, filled up with excellent historical portraits, and with a handsome cornice at the top, is very substantial-looking and handsome.

We must now cross; and, in doing so, a word of praise is fairly due to Messrs. Gray and Davison's fine organ. Although we are little attached to the dull, blue-ground arabesque style which the pipes display, we cannot withdraw the praise which this really fine instrument deserves. There are three manuels, each extending to CC, with a pedal organ to CCC, with four stops, three of which are sixteen-feet pipes. The bombarde, or pedal trumpet, posauone, or trombone (for the same stop is known by all these names among London organ-builders), in wood, well deserves notice for its massiveness of tone, and its great power; and the double diapasona, which are numerous, bring out great and condensed power. The swell is very brilliant in its tones, and we cannot help thinking that this fine instrument, lately removed from the transept, is intrinsically the best in this vast building.

As we turn to the right of the organ, we must do justice to the specimens of wall-paper and decorations, furnished by Messrs. Cuthbertson and Co.

We now commence with the—

CENTRAL SOUTH-EASTERN GALLERY, marked I in plan.—The galleries over the Foreign Nave contain some superb damasks, table-cloths, and curtains, but need not detain us long.

Messrs. Jordan and Ninans, of Dresden, contribute some pretty and ingenious toys. A beautiful lady's dress, with a jaconet figured in gold on green velvet, by Krause, of Plauen, and some similar works, of great variety and beauty, by Messrs. Stoelgel and Son, of Eibenstock, will not pass forgotten by the ladies.

A brass clock, enclosed in a leather case, and so adapted for travelling, by Threnike, of Berlin, deserves notice for the ingenuity by which the mischiefs arising from the jolting of vehicles are obviated. We have no doubt that a similar application might be directed to clocks designed for ship-board. Among the numerous balances exhibited, is one by Reimaun, of Berlin, which weighs anything, from one milligramme to one kilogramme, *i. e.* from 1-65th of a grain to 2½ lbs. avoirdupois. He also exhibits a set of weights of brass, gilt by galvanic process.

We come next to an organ, situated in the centre of this gallery, by Messrs. Schulze, of Thuringia, containing the following stops:—*a. Great Organ*—1. Open diapason, 8 feet; 2. Double diapason (wood), 16 feet; 3. Bass-viol, 8 feet; 4. Hollow flute, 8 feet; 5. Stopped diapason (wood), 8 feet; 6. Principal, 4 feet; 7. Mixture, five-ranks, 2 feet; 8. Trumpet, 8 feet. *b. Choir Organ*—9. Violin open diapason, 8 feet; 10. Stopped flute, or sweet intonation, 16 feet; 11. Ditto, ditto, 8 feet; 12. German flute, 8 feet; 13. Ditto, 4 feet; 14. Diapason, 4 feet. *c. Pedal*—15. Octave bass, 8 feet; 16. Posaune, (trombone), 16 feet; 17. Sub-bass, 16 feet, taken from the double diapason, 16 feet; 18. Violin (double-bass), 8 feet, principal 8 feet; 19. Flute bass, 8 feet, the hollow flute, 8 feet.

“This organ,” according to the circular issued, “has blind prospect-pipes, which have the advantage that the construction of the interior is more simple. It requires no roller-boards, and is constructed with squares which go in an oblique direction to the valves. In front, an empty place for tuning is left, and the smaller stops may be placed in front, to the great advantage of the tone of the organ. It has a stronger tone than another of larger dimensions, and yet it has several soft stops, the whole being constructed after the theory of Professor Töpfer. It takes up less room than any other with the same number of stops; weighs less, and requires less labour, than others of the same dimensions; and may be fixed in its place of destination in one month. It is constructed in such a manner that deeper tones are heard than really are in the organ, and for less expense an organ will be obtained which has more power and depth than usual. It also has a reserve bellows, which assists materially the more rapid speaking of the pipes, and which is of importance so far, as a bad organ-blower is made unimportant.” There may be much ingenuity displayed in the construction of this instrument, but it is certainly immeasurably inferior to any of the larger ones in the Exhibition in tone and power. A thinness and want of depth appears to be its greatest defect, while the absence of a swell-organ deprives it of one of the most delightful effects of which the instrument is capable.

After passing some pianofortes, we next come to a perfect avenue of silks, among which we cannot fail to notice the magnificent gold tissues from Vienna, some of which are intended for ecclesiastical garments.

The damasks and embroidery for decorative furniture are in good taste, and exceed in richness anything we have ever before seen. Many of the specimens of damask for curtains are embroidered in gold and silver. The character of the designs, however, is carefully preserved, and there is nothing gaudy or meretricious in this brilliant display, although the style is far more elaborate than anything attempted by the English manufacturers. Some specimens of embroidered satin, by Moritz Schopper, of Vienna, are remarkable for the richness of the colouring, and the tasteful designs and wonderful contrasts they exhibit.

The choicest and most costly productions of the looms of Lyons have been arranged in such a manner as to form one of the most attractive features of the Exhibition, and naturally obtain a large share of the attention of fair visitors. The inspection of these gorgeous and brilliant fabrics possesses a peculiar interest for the people of this country, as being the department of manufacture in which it was anticipated that we should have the most severe struggle for supremacy,—the high reputation and long-trying skill of our French neighbours having obtained for them a world-wide celebrity, which, until a few years since, was unapproachable. The display of French silks, satins, velvets, and embroideries, is certainly magnificent, and strikingly illustrative of the peculiar taste and excellence of the productions of that country in textile fabrics. The perfection to which silk-weaving has been brought in Lyons, is strikingly exemplified in a picture, about 2 feet square, which, without very close inspection, cannot be distinguished from a finely-executed engraving. It represents the Queen and Prince Albert seated, with the Prince of Wales standing by their side. The likeness and expression of the countenances are wonderfully accurate. This is the production of Potton, Rambaud, and Co., of Lyons. The design occupied seven draughtsmen thirty weeks. It required fourteen thousand cards for the looms, of which three large and one small Jacquard machine were in requisition, to prepare which cost 5,000 francs. By this complicated and expensive machinery only three tableaux can be made in a week; and two weavers are constantly employed, relieving each other every two hours, with a master constantly superintending. The picture has been wrought for Leifchild and Co.; and as one of the most wonderful specimens of silk-weaving in the Exhibition, is appropriately dedicated to her Majesty.

The plain and embroidered satins cannot be excelled in the elegance of the designs and fineness of the texture; wreaths and groups of flowers, coloured after nature, in the most brilliant tints and artistic arrangements, are exhibited in these costly fabrics with all the skill and perfection of a picture. The defect of most of them to an English eye is in the striking contrasts and bright tints employed; but we must take into account national tastes and peculiarities, and above all the great superiority which the French dyers possess over us in the richness and permanency of their colours.

A chasuble of crimson velvet, in the Byzantine style, decorated

with pierreries, exhibits an amount of labour and ingenuity which might be turned to better account. Another, in light blue satin, embroidered in silver, is worth examination from the exquisite imitation of lace, surmounted with a wreath of flowers, with which the lower part of the robe is ornamented. The display of velvets is not so large as might have been anticipated, and the colours are not seen to advantage, as the whole front of the gallery is covered with an awning to keep off the light. The specimens of moire antique are extremely brilliant and novel, the tissue being in some instances mixed with a portion of gold or silver thread, imparting great lustre to the fabric.

The shawls exhibited from France are generally admitted to be the nearest approach to the costly Indian fabrics; and some of great size and beauty are well worthy of a lengthened examination.

We now come to the cases appropriated to the Swiss silks and satins, from the canton of Zurich. The colours are extremely delicate, and the texture as soft as velvet.

Having reached the transept, we turn to the left, and notice the space appropriated to British clothing, which is sufficient to convince any one of the competency of Englishmen to compete with everybody on any ground whatever. A trophy of pocket-handkerchiefs is replete with some splendid specimens.

After looking at the splendid display from Messrs. M'Gee and Co., Belfast, we notice a superb specimen of a court dress, mounted on an elegant lay-figure of wax, by Mrs. Phillpot, of North Audley-street.

The efforts of Messrs. Harrison and Son, of Leicester, in the manufacture of woollen goods, are too extensive and superb to escape notice.

Among the superb display of shawls with which this department is rife, Messrs. Kerr and Scott, of Paisley; Hutchinson and Co., of the same place; and Abercrombie and Yuell, exhibit collections unrivalled even by the richest Cashmere specimens. In the immense case exhibited by the first-named firm, there is also a pretty model of a shawl machine.

We will now return, and pay a deserved attention to the double-brocattelle damasks, exhibited by Grosvenor, of Kidderminster.

Messrs. Lewis and Allenby, of Regent-street, also exhibit an extremely rich brocaded silk, manufactured by Campbell, Harrison, and Lloyd, in Spitalfields, from the elegant design of Mr. S. Lewis. This beautiful specimen of weaving is brocaded in fifteen colours, a number most unusual and hitherto never attempted in this country. To produce these in the elaborate pattern exhibited, the enormous number of 29,600 cards are required, and 96 shuttles. It is justly considered to rival the choicest productions of Lyons. Also a *broché* riband, manufactured at Coventry, designed by Mr. A. Lewis.

When having reached the organ erected in the centre of the South Transept Gallery, we return through the hosiery, and commence examining the—

**SOUTH-EAST GALLERY**, marked K in plan.—We now come to another display of dresses, shawls, and other paraphernalia, much more interesting to ladies, in a shop-window, than to readers in a description. The superb curtains, by Adolphe and other manufacturers, as well as the delicious chintzes, are beyond praise.

A collection of ribands, buttons, hats, and other similar goods, and some handsome saddles from France, conduct us to a region of shop-like stalls, in which there is a superb display of stays, flowers, feathers, cambric, cord, twine, works in horse-hair, &c.

A case of dolls, also of French manufacture, exhibits some neat and rather pretty specimens. It is, however, not to be compared with the dolls of Montanari, either for variety, elegance, or beauty of imitation.

We next notice a ship sofa-bed, constructed with the view of preventing sea-sickness, which deserves attention. Trial is here, of course, out of the question, but this distressing and anomalous complaint, which has completely baffled the abilities of medical practitioners, may perhaps yield to *mechanical* means. The principle of the present contrivance appears good, and calculated to remove the vomiting, which appears to be the leading cause of the evil.

Samuel Matthews, successor to Charles Mackintosh, exhibits a collection of India-rubber portable boats, which have been used for the last six years by a great number of the nobility and gentry, and having given the most unqualified satisfaction, may well be recommended to public notice, as being possessed in an eminent degree of the essential properties of extreme buoyancy, non-liability to upset, and great portability.

These boats are made of two kinds,—a larger one, extremely well adapted for lake-fishing, duck-shooting, and general purposes; and the other a smaller kind, which can be worn as a cloak (hence called the cloak-boat) when uninflated, and calculated to be of essential service to travellers. The larger description of boat is constructed of the best sail canvas, made air-proof in the usual manner by means of India-rubber, which, when inflated, is capable of carrying four persons with ease; it is exceedingly steady on the water, and is propelled by means of a paddle, in a similar way to a canoe, or by oars, sculls, &c., as may be required.

The light weight of this boat (not much more than 56 lbs. with bellows and paddles), and the small compass into which it is capable of being packed, render it exceedingly well calculated for lake-fishing, shooting, &c., as it can be readily conveyed to places where it would be impossible to transport any other kind of boat. Another of its advantages, its non-liability to upset, makes it far preferable to the old "coracle," to which this accident is so likely to occur. One of the characteristics of this kind of boat, its extreme buoyancy, is owing to the large size of the cylinder running round it, which, when filled with air, gives it its shape, and makes it capable of sustaining a very great weight, thus rendering it valuable on board ship as a life-boat; for in cases of emergency two or three of these boats thrown overboard, each having a rope passed through the eyelet-holes round the edge, would be capable of supporting upwards of a hundred persons. A great recommendation for its use in this respect is the rapidity with which it can be got ready for use, as it can be inflated by means of bellows made for the purpose in less than four minutes. It can also be asserted with confidence, on the authority of parties who have had them and seen them used, that persons might be landed by means of these boats, through a heavier surf than by any wooden-built boat.

The cloak-boat is made of the ordinary waterproof material, fitted with an air-proof cylinder, and is intended to carry one person; it is

extremely serviceable to persons travelling abroad, for the purpose of crossing rivers or streams where no other means are at hand ; it can be made instantly available, and, in cases of necessity, may be converted into an excellent bed. The weight of this kind of boat, with bellows and paddles, is about 10 lbs. An umbrella, to act as a sail can also be furnished if required.

We must next admire a collection of stuffed birds, with some beautiful mosses, collected about the Orkney Isles ; as also a model of the rock on which they were found, by Hubbard, in 1849.

Our boat-racing friends will readily excuse a word of panegyric on the boats which are found about this neighbourhood. We will be as little tedious as possible, and merely remind them that Biffin and Sons display a model boat, calculated to change into a four or eight oar at pleasure, by merely taking out some of the parts, thereby making one boat as good as two. With all our admiration of the ingenuity of this work, we must express some doubts as to its safety or general utility, even as a prize-boat. When not in use, it can be packed so as to occupy less space than a single boat on the old principle.

M. W. Ruthven, of New-street, Edinburgh, deserves praise for a pretty model of a steam-vessel, with improvements for propelling and navigating. A pair-oared gig, by Messrs. Searle and Sons, who have also contributed the superb model of the Lord Mayor's state barge, cannot pass unnoticed. The same remark justly applies to Noulton and Wyld's beautiful outrigger sculling-boat, for racing. The body of this extraordinary vessel is composed of one single plank, from head to stern, without a joint or reel. Such an application of pure material beats the most ingenious Canadian "dodges" in a similar manufacture.

Messrs. Searle, who are decidedly the "lions" of boat-building in the Exhibition, also exhibit an "eight-oared" racing-boat, sixty-four feet long, but beautifully light, and enough to make an Oxford man take to betting wholesale.

We now come to Foster's model boat, built of wood, coated on both sides with a compound of gutta-percha and India-rubber, which, with some specimens illustrative of the ordinary effects of cannon-balls upon such maritime structures, compared with those commonly in use, well deserve attentive comparison.

Messrs. Silver's mattress, capable of sustaining several persons at sea, and yet furnishing a comfortable companion to the hammock to those fairly on board, well deserves notice. The fearful accidents at sea, and the comparative inefficiency of the means hitherto adopted to guard against them, render such inventions worthy of attention. On the seas, where so many lives are continually placed in peril, where the risks are so manifold, every invention, even approximating to a chance of saving human life, deserves consideration from the philanthropist.

We must give a short notice to the collection of surgical instruments which the French exhibit. We have already spoken of an ingenious set of lay-figures, or, more properly speaking, "anatomies élastique," which an ingenious professor exhibits. These are excellently exhibited in this gallery ; a model of a horse, and a man, each in several thousand pieces, capable of being displaced, so as to show the various layers of muscles, the different veinous and other systems in the body. The full notice we have already given of these "lay-



figures" precludes the necessity of entering upon further detail in the present instance.

France has always been famous for great neatness and finish in the manufacture of surgical instruments, and we can declare there are no better illustrations than those provided in this department. A lay-figure almost painfully equipped with machinery to remedy every defect that "flesh is heir to," one or two equally sad-looking figures, with various apparatus to remedy pectoral or other defects, bring us back to the sad consciousness of the connection between human miseries and human science.

Along the wall are some capital specimens of Byzantine early paintings, which for gaunt crudity and the bold violence of colours, may vie with many specimens in some of the old libraries in this country. Although we are duly aware that the rise of Italian art dates its origin from the earliest efforts of the Byzantine school, we cannot profess admiration for these crude efforts, although antiquity must ever bear away the bell, to a certain extent, among the lovers of the arts.

France sends some bedsteads in bronze-work, and some elegant specimens of looking-glass and packet-work. Some billiard-tables, the platforms of which, instead of baize or slate, are inlaid in oak and mahogany, of amazing smoothness, almost rivalling the finest specimens in harder materials.

We will now cross over to the British Galleries, and commence with the

NORTH TRANSEPT GALLERY, at its centre, where Gray's organ formerly stood, and proceeding eastward we first notice the model of a tomb at Pompeii, by Batten and Son. This is extremely interesting from the beautiful manner in which the Etruscan vases are modelled. The only way to do justice to the excellence of the imitation, is to compare them with the originals in the Hamilton collection, from which these admirable copies derive their origin. A massive vase, in Parian, and a large earthenware tray from the Derby pottery, well deserve notice, but a still more important application of this elegant, cleanly, and useful manufacture is developed in the models of baths and wash-houses, and also in a porcelain tile bath. The attention paid of late to this most important branch of sanitary reform will render these objects well worthy of attention.

Daniels exhibits some dessert services, executed at the Coalbrookdale china manufactory. We were much struck with their elegance.

The statuettes by Keys and Mountford, of "the Potteries," representing boys with perforated baskets, for desserts, and a Bacchanalian wren, from the antique.

T. and R. Boote, from Burslem, send a Portland vase, 3 feet high, with a pale fawn ground and white figures; also a bust of Sir Robert Peel, in Parian, after Lawrence. Few arts have evinced so rapid a progress as the application of this beautiful material to the realization of the most successful designs of our popular sculptors. Nevertheless we regret that there are so many "Dorotheas," "Unas," and "Eves at the Fountain." We are too familiar with them through the medium of the shop windows.

Meigh and Son, of Hanley, contribute, among other objects, two large and handsome vases, one with the portrait of her Majesty,

and on the reverse a view of the inside of the Exhibition building. The other a portrait of Prince Albert, and on the reverse side a view of the outside of the building. These are not only interesting from the apropos character of the subject, but from the beauty and finish with which they are executed.

Quitting the North Gallery Transept, we turn to the right, and notice the contents of the

**NORTH-WESTERN GALLERY**, marked L in our plan.—Especial notice is claimed by the many interesting articles made by the pupils of the School for the Indigent Blind, in St. George's Fields, Southwark. They comprise a variety of baskets, netted and knitted work, and are most creditable testimonies to the advancement made by enlightened philanthropists for the education of the blind.

A pulpit, for a church at Holbeck, Leeds, the figures by John Philip, from a design by G. G. Holt, of London, is a handsome piece of oak-carving, in good taste and ecclesiastical style.

A Bible with a carved oak cover, by J. Gould, of Tottenham Park, Marlboro', with plated clasps, is a splendid effort to revive the antique style of binding religious and scholastic works. It would be a noble present to a newly-built church, and does high credit to the clever workmanship of our bookbinders.

A little further on we meet with some bonnets manufactured from rye straw in the Orkney Islands, of a very pretty plait and texture. They are the result of instruction given by a philanthropic family, who were desirous of providing a new employment for the winter evenings of our northernmost countrywomen. The specimens exhibited by Mr. J. Rendall, of Stromness, Orkney, bear a comparison with most of those sent from places famous for Leghorn plait. We gladly commend this new specimen of industry triumphant over material.

A caddy formed of 100,000 rare and valuable shells, the interior of the lid displaying a bouquet of flowers, worked in beads, is one of the prettiest pieces of shell-work in the whole collection.

A Mr. Smith, near Hailsham, Sussex, has sent a set of baskets formed of staves of willow wood, in a sort of boat-shape, of all sizes, from a clothes-basket to a reticule. These he somewhat amusingly recommends for all sorts of purposes, for example, "toys or coal-scuttles!"

A piece of carving in solid oak, by W. Halliday, representing Chaucer's Canterbury Pilgrims setting out from the ancient Tabard Inn; although the work of a self-taught artist, displays great taste and executive ability. The recent excitement in the literary world respecting repairing the tomb of our great poet in Westminster Abbey, which has been supinely suffered to fall into decay, will direct the attention of not a few persons to this ingenious piece of really good workmanship.

The display of carpenters' tools, by Mosely and Sons, of New-street, Covent-garden, will bear comparison even with the beautiful bench of tools which we noticed in the Austrian department.

Mechi is "at it again," with a glorious collection of cutlery, which people will not easily forget.

A complete lathe, with the whole paraphernalia of checks, vices, &c., necessary for the most minute works, by Messrs. Knight and

Sons, of Foster-lane, well deserves the attention of the amateur in this pretty, and by no means unpopular, species of handicraft. Some anatomical models, enclosed in a private case, well deserve inspection.

To emigrants it is fashionable to recommend a variety of inventions, extremely useful, no doubt, if people have the money to purchase them, but very often much too costly and inconvenient to be accessible. Of this class is the model cottage of corrugated iron, which is much too cumbersome and expensive to be suited to nine-tenths of the people who really want to emigrate. There is more plausibility about the "patent felt" cottage, exhibited in this same department, provided it only be water and fireproof. An umbrella tent is very ingenious, if it will stand against the high wind, but we doubt its being manufactured at a sufficiently moderate price to render it generally available.

Captain Moorsom's prize design for the great bridge over the Rhine, to be erected at Cologne, is admirably executed, and shows engineering calculations of no ordinary cleverness. He was the first engineer who introduced the railway lattice bridge, from America, which he has carried out in a handsome bridge over the Nore, in Ireland, as well as on the Birmingham and Gloucester line.

We may, for the sake of humanity, notice Every's patent Vulcan chimney-sweeper, and Neale's prize machinery for the same purpose, as well as some plans and diagrams, illustrative of remedying smoky chimneys. We must not forget the fire-escapes.

Every one is pretty well convinced of the total unfitness of Westminster Bridge to stand, and we shall gladly notice some pretty designs, one of which, in this part of the building, by Rennie, is very handsome, but yields to another, which we find further on, by Messrs. Hunt and Gandall. This latter bridge is designed in strict accordance with the ornaments of the Houses of Parliament, especially in the turrets. It is certainly important that, provided strength be not sacrificed, due regard to consistency of style should be followed.

Among the innumerable models exhibited is one of the *Great Britain* steam-ship, as she lay on the strand at Dundrum Bay, with all the ingenious apparatus and lever power by which she was removed and sent afloat. The vessel, boats, &c., are made of tin, neatly executed and painted, and are duly equipped with the chains, boxes, &c., used on the occasion.

The Commissioners of Northern Lighthouses, Edinburgh, contribute a most valuable model of the Bell Rock Lighthouse, lighted in 1811; executed according to the design and under the superintendence of the late Robert Stevenson, with the whole of the machinery employed, together with a representation of the wooden island or cage, in which the workmen lived during its progress. We may also notice the model of the Skerryvore lighthouse, executed according to the design and under the superintendence of Alan Stevenson, a model of a balance-crane, designed by the late Robert Stevenson, and used by him in the erection of the Bell Rock Lighthouse, a model of the apparatus of an intermittent light, designed by the late Robert Stevenson, and introduced by him at the lights of Tarbetness, Barrahead, and Mull of Galloway, on the coast of Scotland. We must not forget a model of a lighthouse lantern, on the diagonal arrangement; designed by Alan Stevenson. Mechanical lamp of four wicks, in which the oil is kept continually overflowing

by the means of pumps, which raise it from the cistern below: the rapid carbonization of the wicks which would be caused by the great heat is thus avoided. To the same class belong models of a floating breakwater, and foundation for a lighthouse or place of refuge on the Goodwin Sands. This is, unfortunately, but one of numerous contrivances for averting danger on this most terrible of seaman's terrors. Just at the top of staircase is a large and well-executed model of Mr. Dunhill's design for a proposed suburban live and dead cattle-market, of sixty acres, with *abattoirs*, &c. It is to be hoped that this model will arrest the attention of the million of land-owners who will visit the Exhibition, to the all-important subject of removing the many nuisances connected with a cattle-market from the midst of the largest city in the universe; and that they will leave no stone unturned to effect the annihilation of the almost numberless slaughter-houses which now pollute the atmosphere of the metropolis. A handsome model of the High Level bridge at Newcastle-upon-Tyne, by Haws, Crawshay, and Co., Gateshead, Newcastle-upon-Tyne, will attract much interest, as the public press has teemed with descriptions, which are here nicely realized.

The veteran Captain Samuel Brown, the inventor of the chain and pier bridge, exhibits, among other things, a model of the suspension pier at Brighton. Although this has since been surpassed, both in magnitude and elegance, we cannot withhold from it the praise of invention. To the many people who throng to Brighton almost daily, it will be an object of much interest.

The diving armour is probably familiar to most of our readers who have visited the Polytechnic, and elevated themselves above the surrounding spectators by going down in the diving bell. The same may be said of the Plymouth breakwater.

WESTERN GALLERY.—We turn to the left, and on our right we notice the large ordinance maps, which form a fitting introduction to the models illustrative of naval architecture. Among the first we must notice Mr. A. A. Hely's catamaran, or life-float, composed of waterproof canvas cylindrical cases, filled with bedding, provisions, &c.

Greener, of Birmingham, makes a formidable display of guns, the more prominent being devoted to philanthropic and useful, rather than aggressive purposes; one being intended to fire a rocket with a line from a life-boat to a ship in distress, and the other to discharge a barbed harpoon into the body of one of those sperm whales which yield the oil which is so indispensable to the lubrication of our finest machinery. A tremendous punt gun may also be considered in the same light, as it is of the kind used to supply our winter markets with all manner of wild fowl.

The Duke of Northumberland has lately, with a humane and judicious liberality, offered a prize of £100 to the inventor of the best life-boat. This spirited offer has elicited many attempts to improve this most invaluable implement, and there seems reason to hope, that comparative safety may be at length attained in that most distressing of emergencies, shipwreck. Among the number of persons who have contributed specimens, we must notice Mr. Light, of High-street, Wapping. The object of this invention is to render ordinary ships' boats so buoyant that they virtually be-

come life-boats, and are capable of saving the crew and passengers under almost any circumstances. The material employed is naturally extremely buoyant, and by the process to which it is subjected, is rendered impermeable to moisture. By filling the spaces between the timbers and beneath the thwarts with this material, previously made up into properly-proportioned packages, and then covering the whole with a thin lining of boards, a boat is rendered so buoyant, that even when overloaded with passengers, should the waves break over it, there would be no risk of its sinking; or, should even the bottom be stove in, the frame would float and act as a raft, which the material, from its tenacity and fibrous nature, would hold together. The specific gravity of the material is so very small, that the additional weight to the boats is scarcely felt in hoisting them on board, and no injury can be caused by driving nails, or by blows, as is the case with metallic or cloth air-tubes, cases, &c. The process can also be advantageously applied to the bulwarks and between the timbers and the ceilings of ships; and it must be evident, that in the event of their going to pieces, each portion would, from its power of flotation, become a life-buoy. It should be remarked, that the material can be adapted in any bulk, in any form, and to any part of the ship or boat usually left vacant, and consequently, that it will not diminish the place for stowing the cargo; and that the mattresses, couches, seats, and all the furniture, could be rendered subservient to saving life. It may likewise be applied to jackets, belts, life-buoys of all kinds, and for floats for fishermen. The life-belts are unequalled in lightness, can be adjusted in ten seconds, and are incapable of being injured by puncture or climate.

Mr. Dyne exhibits a life-boat formed of diagonal battens, laid similar to that of lattice-work, its outer sheathing being formed of gutta percha; its buoyancy is 350 cubic feet of air, capable of sustaining upwards of  $9\frac{1}{2}$  tons. It has in its bottom 3,600 holes, half an inch in diameter, to allow all water shipped to pass off; it has a convexed bottom 30 feet long, 2 feet wide, and 18 inches deep, in which are placed three perforated fins, for the purpose of steady-ing and keeping the boat in an upright position, acting when the boat lurches from either beam similarly to a paddle-wheel, a reaction taking place through the perforated parts, which will be seen to multiply its weight of water to four times its amount. In this convexed part, and between the fins, is contained two tons weight of water, which must be displaced therefrom before the boat can turn over, but such will be almost impossible, it being more than half the weight of the boat; but, as provision against such a lamentable disaster, she turns over on her quarter 16 cwt. of water, which rights her again. It may be remarked, that the two tons and 16 cwt. of water referred to is not one ounce weight to the boat when in her upright position. At the stem and stern, and on each beam and quarter, is run a bow, to which is connected galvanized springs, which will not corrode, and will be found of the greatest utility in the event of collision, which act similar to that of railway buffers, from drowning, or to enable a stranded vessel to communicate with the shore. It is intended to be placed at the stern of the ship, so that on an alarm being given, "A man overboard!" the person at the helm can dislodge it instantly, and as it falls into the sea a fuzee becomes ignited, which burns with

a brilliant light, guiding the sinking man to it; should it occur at night, four uprights are placed upon it, containing rockets, blue and other lights. Also, an emigration life-boat, intended for a first-class vessel, of the following dimensions: 20 feet long by 14 feet wide; it is united by strong bolts, and is very portable, from the mode of its construction, which allows it to be folded up in the compass of 20 feet long by 2 feet 6 inches wide. On occasion of shipwreck it is capable of supporting 100 persons, with provisions for seven days, allowing for each individual two and a half pounds of food and one pint of water per day; in addition to which, it may be made available for a portion of the cargo, and can be put in requisition in a few minutes.

Several other life-boats are exhibited, one, which is remarkably beautiful in form, is by Mr. Bonney; clinker-built, with planks of gutta percha. The sides are doubled from the bilge to the spar-deck, and divided into water-tight compartments, and the fore and aft parts of the boat are also divided into water-tight compartments. She has been rowed and sailed on the Thames and the Serpentine, and many experiments made with her. She was repeatedly filled with water; men endeavoured in vain to overturn her, and she sailed full of water apparently without the least impediment, though ordinary boats, under such circumstances, would have been wholly unmanageable and useless. The yacht being hauled over, and so half-filled with water, upon being released, righted at once of herself. Mr. Bonney asserts that she cannot be capsized or sunk by accident, and hardly intentionally by powerful force applied to her. The plan is applicable to crafts of all sizes, and of any external lines, so that boats already in use can have the principles of this yacht applied to them.

A word in praise of Messrs. C. A. and T. Ferguson's improved gun-carriage, which consists of a most ingenious application of the slide to common broadside carriages, including friction chocks, training chocks, and trucks of an improved form. These important improvements can be fitted to the broadside carriages now in use, without occupying any more room on deck; nor would their application alter the general appearance or system of exercising the guns while a saving of expense would be effected both in time and labour, as compared with the working of ordinary carriages. The friction chocks act as a powerful check to the recoil, and also prevent the guns running out otherwise than required, their movements being under perfect control by one man, and capable of being regulated with the utmost nicety. Guns fitted with the improved carriage may be secured at sea by any of the usual methods; in addition to which, they will have the powerful aid of the friction chocks to keep them in their places. In case of injury, all the parts are easily repaired, and should it be necessary to transport the guns on shore, or on board other vessels, the added improvements will in no way impede their usefulness as common carriages; or the additions may be removed in a few minutes, if required.

The models of ships about here are enough to drive all the juvenile enthusiasts, who gloat over "Robinson Crusoe," off to sea at once. Those by Money Wigram, in particular, deserve notice. The same may be said of the model of an 80-gun ship, by MacLaren, of Camden-

town, fully rigged, as well as another of an improved steam-vessel, by J. A. Clark, of Birkenhead, which possesses all the qualities desirable in a good sea-boat, and for carrying weight at an increased speed. As models, they are excellently finished; and, in a word, we have a complete dock-yard full of shipping, of every nation in the world, throughout the Exhibition.

We must now come to Willis's monster organ. This tremendous instrument, containing 80 stops, is nevertheless so excellently arranged in its compositions, that the touch is scarcely heavier than that of an ordinary pianoforte, even when the full organ is employed; while the substitution of valves, placed along the front of key-boards, enables the player to command the most rapid transitions from loud to soft, without the inconvenience and hesitation resulting from the drawing out of a multitude of handles, or the pressing of hard and heavy composition pedals.

It is unnecessary to enter into a full description of the various stops found in this splendid instrument (which might, with justice, occupy a position in St. Paul's Cathedral); but when we inform the musical reader that there are no less than 12 stops of 16 feet (CCC), which, when the copulas are on, may all speak at once, he may form a fair idea of the massive weight of tone displayed in this instrument. The swell, which is the largest in Europe, runs the full compass, even meeting the pedals with its double diapasons. It possesses the full complement of mixture stops, and five reed-stops.

The great and swell organs are played by means of the pneumatic lever, exhibited in a vertical position, and worked without the aid of additional pressure of air. In the choir and pedal organs are introduced two newly-invented patent valves, over which the pressure of the air has but little influence. The patent movement introduced in connection with a compound application of the pneumatic lever, and which brings the command of the instrument completely under the thumbs of the performer, enabling him to draw stops in combination, of which there are 24 changes, renders this immense musical machine, though elaborate, perfectly manageable. The mechanism includes several novel arrangements, and in the various bellows there are five different pressures of air.

Near this organ we may notice Dunin's model man, who is, we assure our lady readers, no connection of the monster in Frankenstein. It represents a man 5 feet high, in the proportions of the Apollo Belvidere, and from that size the figure can be proportionally increased to 6 feet 8 inches; and, as it is intended to facilitate the clothing of an army, it is so constructed as to be capable of adjustment in every part to the particular proportions of each individual. To obtain this result, the most complex contrivances are required, and the number of springs, screws, and other movements, render it a marvel of human ingenuity. The tailors regard it with admiration, but its costliness of construction renders it an instrument too expensive for them to purchase. It is a marvellous sight to see the model expand, and it is well deserving a careful inspection. The mechanism is composed of 875 framing pieces, 48 grooved steel plates, 163 wheels, 202 slides, 476 metal washers, 482 spiral springs, 704 sliding plates, 497 nuts, 8,500 fixing and adjusting screws, with numerous steady-pins, so that the number of pieces is upwards of 7,000.

After turning to the left, looking at some fine globes by Johnstone, of Edinburgh, and a large celestial one by Newton, we leave the organ behind us, and come upon some ingenious contrivances in favour of aeronautic attempts. We do not wish to extinguish the hope that locomotion through the air may be effected, but we hardly believe it will be realized by any of the contrivances to be seen within the Crystal Palace. A provisionally-registered self-propelling rotary balloon, which the inventor says may be "shortly described as a buoyant screw," shows the fallacy of ordinary notions of guiding balloons through the air. It is supposed that nothing more is necessary than to present an inclined surface to the air, in a similar manner to sails, and that the balloon will be propelled in a different direction from that of the wind, in the same way as a ship. How the wheel and axis are to be supported does not appear; and could the rotation of such a body cause a variation in the motion, it could not be directed to any required course. In another of these aerial machines, the guiding and propelling apparatus is a blower directed against the insides of two hollow cones, the force of the blast being expected to propel the car to which the propelling power is attached. This seems little wiser than the attempt of a man to lift the chair in which he is sitting.

We now proceed along the

CENTRAL NORTH-WEST GALLERY, marked M in our plan, and come to a case of instruments by Mr. Dixie, of Bond-street, comprising a good collection of thermometers, mathematical, drawing, and optical instruments.

Mr. John Whitehouse, of 10, Tottenham-court-road, here exhibits a pair of spectacles made of steel, of the ordinary size, but so light that, including glasses of strong magnifying power, they only weigh  $10\frac{1}{2}$  grains, or half a grain less in weight than the quarter of a sixpenny-piece. Also a pair of standard-gold spectacles, of the full size, the value of the gold contained in which will amount but to two shillings.

To say the truth, however, this department exhibits more excellence of workmanship than novelty of invention.

Messrs. Claudet, Beard, and Mayall, of America, display a quantity of machinery, preparations, and chemicals, adapted to daguerreotypes. But the grand show of this description of art must be sought for in the American department.

Baker's model of an instrument called the Periphan, by which the ordinary solar and lunar phenomena are elucidated in a clear, simple, and unique manner, deserves some notice. To adjust it for any particular place and day, we first fix the circular wire (called the horizon-wire) in such a position (according to the degree marked on the vertical circle) that it might describe the horizon of the place; we then turn the large thumb-screw till the outward semi-circular wire (called the solar wire) is just opposite to the day as marked on the horizontal ring, and move the red orb (representing the sun) up or down till it is as near as possible to the day; we then, by means of the thumb-screw, turn the solar wire till the centre of the sun is in the plane of the horizon on the east side, and the index will show the time of sunrise; and, if brought to the west side, it



will show the time of sunset. The small white orb represents the moon.

Mr. Chamberlain's voting-machine is the most complete thing of the kind ever produced, and we shall be justified in trying, in a sentence or two, to enable the reader to understand it. This model is constructed for the use of an election when three candidates—Nos. 1, 2, and 3, or any names which the reader chooses to suppose—are standing for two seats; and, like most other things, it has a back and a front. At the back, or the voters' side, are four knobs or bell-handles; on the front, or polling-clerks' side, are five dials, with four handles,—four smaller ones, marked No. 1, No. 2, No. 3, and "Nobody," being covered from view; and one larger one, showing the "Total Votes recorded," being exposed. The voter enters behind; and, supposing he desires to vote for No. 1 and No. 3, he pulls the handles so marked; or, supposing he wishes to plump for No. 1, he pulls the handle of No. 1 and of "Nobody." The effects of each pull are to sound one stroke of a bell, and to mark one vote on the dial of "Total Votes recorded," open to the polling-clerk, and on the smaller and covered dial of the candidate whose handle is pulled. The trick, which might seem possible, of giving two votes for one man, is prevented by the handles, when once pulled, being disabled for being pulled again until released by a piece of machinery moved by a turnstile through which the voter passes outwards. To one of the handles, however, this regulation does not apply—the bell of "Nobody" admits of being pulled twice, to meet the case of a voter wishing to vote for none of the candidates. Of course, at the close of the pole, the cover is lifted, and the number of votes recorded on the dials decides the election. The contrivance seems without a flaw. It excites considerable curiosity, and is constantly surrounded by visitors, to whom a gentleman explains and exemplifies its working,—“Now I vote for Mr. Cobden and Mr. Disraeli—now I plump for Lord John”—going on voting all day long, with a frightful disregard of principle and consistency.

The electric telegraph, as a means of communication, has made such wonderful strides of late, that the specimens here exhibited will excite less surprise than interest. Among the many excellent illustrations of this almost magical implement of science, we will mention Mr. Reid's electric-telegraph instruments, adapted for hotels, and some specimens of insulated wire, for submarine electric telegraphs. Messrs. J. Brett, of Hanover-square, exhibit some machinery for electric printing. But their most interesting curiosity is a portion of the experimental wire which was passed along the bottom of the channel last August, when messages were printed by this telegraph from England to France.

Mr. Henley's large permanent horse-shoe magnet, weighing 6 cwt., is only one of a number of interesting objects contributed by the same exhibitor.

The copying electric telegraph, by Mr. Bakewell, exhibits one of the most surprising and useful results of the application of electricity to the common purposes of life. The writing of this telegraphic apparatus, which is white on a blue ground, has very much the appearance of writing done on design-paper or such as may be seen in use by ladies for working figures on cloth in Berlin wool. The

message which is meant to be forwarded, is written on tinfoil, with varnish. This writing is fixed to a revolving cylinder, which is connected with the conducting wire. At the station where the message is to be received, a piece of paper, saturated with a certain chemical solution, is fixed to a similar cylinder. As soon as the electric current is made to flow, the contact is broken always as the point passes over the writing, the varnish being a non-conductor. As long as the current is unbroken, the receiving-paper is being changed to a blue colour, the writing at the same time becoming visible, and is formed of a number of small and intimately-connected square white spots. This telegraph transmits copies of the handwriting of correspondents so exactly, that their signatures may be identified. This is copied at the rate of one hundred and thirty letters per minute. When we consider the process by which a message is produced by Mr. Bakewell's telegraph, we cannot but feel delighted with the wonderful perfection of the copy. Although the writing is far from being as clear as ordinary penmanship, it is sufficiently distinct for all useful purposes, and is as distinctly legible as the largest number of copies of letters made, in counting-houses and lawyers' offices, by the copying-machine. The writing is much clearer when the paper is first taken from the instrument; and Mr. Bakewell is still experimenting, with the view to ascertain the best kind of solution for the purpose.

We have even some comic telegraphs, where a curious face makes various contortions, each of which has its own peculiar signification; and some contrivances to communicate with a guard of a railway train when the carriages are in motion.

Messrs. Griffin and Co., of Baker-street, exhibit some graduated glass instruments for chemical testing; also a collection of decimal weights and measures. Among the hydrometers, is one peculiarly adapted for liquid ammonia.

The collection of musical instruments presents more novelty in the shape of external decoration than internal structure. Erard is so thoroughly identified with the perfection which the grand pianoforte has reached, that we naturally expect some superb specimens, nor are we disappointed. In speaking of the French department, down stairs, we noticed a splendidly-inlaid grand piano of this maker's, and we may instance, in the British department, some gorgeously-mounted instruments, decorated and carved in the Elizabethan style, and a splendid upright grand piano, in a case of Brazilian marqueterie inlaid with silver, with eight exquisitely-sculptured legs.

Another, by Messrs. Broadwood, is an extra-grand horizontal pianoforte, mounted in a gorgeous ebony case curiously inlaid with satinwood, and magnificently incrustated with carving and gilding.

Among others which will attract great attention is a grand horizontal pianoforte, by Messrs. Collard, mounted in British mottled oak, with gold ornaments, in the style of Louis XV.; an elegant semi-cottage instrument, by Ennever and Steedman, in walnut marqueterie, with a peculiar key-board,—mother-of-pearl being substituted for ivory on the white keys, and tortoiseshell for ebony on the black ones.

Messrs. Kirkman, of Soho-square, exhibit some excellent instruments, got up with great elegance and completeness; and a host of

others, by Messrs. Stodart, Purdy, and different makers, will gratify any one in quest of variety in this elegant companion of the drawing and sitting-room.

A tremendous serpenticliede will not pass unnoticed. Nor must we forget a curious instrument, designed by Col. P. Thompson, M.P.—an enharmonic organ—the object of which is, by minute subdivision of the scale, to obtain a perfect intonation in all the different keys. The ingenious colonel also exhibits an enharmonic guitar, the design of which is somewhat similar.

Kidd's silvered glass.—There are some specimens of a new process of embroidering and silvering flat surfaces in glass, among which is an exceedingly beautiful girandole, the form and frame of which are both deserving of marked approval. The embroidered border consists of a wreath of fuchsias, forget-me-nots, roses, and blue-bells, surmounted by the royal crown raised on tapestry, and surrounded by ivy. Nothing can exceed the elegant grouping of the flowers, and the truth of drawing and delicate precision with which every detail of petal, leaf, and tendril is brought out in dead and burnished silver. These borders, as mere matters of drawing, are works of art; and we question if Bohemia herself has furnished to the Exhibition anything superior to some of these exquisitely-executed wreaths of Mr. Kidd. This glass engraving is done by means of a lathe and sundry fine-edged wheels, with which these pencil-like touches are worked into the glass.

A case, by Swinbourne, of South Shields and Newcastle, contains some curious specimens of a new kind of plate glass, in sheets of great weight and thickness, streaked and veined to resemble marble. It is an elegant material, and might be well applied to various purposes of ornament and utility.

Pinkerton's plated metal dessert-plates, inlaid with ornamental cut-glass, and a globe on a pedestal, with highly-ornamental cutting and a plated metal reflector inside, deserve examination.

Messrs. Richardson, of Stourbridge, make a handsome display of painted, enamelled, and cut-glass, in which the ornamental and the useful are ably combined.

From the extensive glass-works of Bacchus and Sons, of Birmingham, we notice, among many other beautiful specimens, a large vase, with lozenge-shaped ornaments of a deep ruby colour, cased with white enamel, and interwoven with wreaths of green ivy. It is alike remarkable for novelty of form and decoration.

Messrs. Osler, of Oxford-street and Birmingham, send a pair of richly-cut crystal glass candelabra, carrying fifteen lights, the property of her Majesty. Some other magnificent candelabra, some large lustres, and a collection of busts in frosted glass, representing her Majesty, Prince Albert, Shakespere, Milton, Scott, and Sir Robert Peel, all do credit to the taste and ability of this great firm.

Messrs. Rice, Harris, and Son, of Birmingham, exhibit a series of most elegant specimens of cut and pressed glass in a variety of colours, gilt, enamelled, and engraved, as also examples of threaded or Venetian glass. Chance, Brothers, also make a capital display of large glass dishes.

Cogan's beautiful model of the Crystal Palace, in light leaden frames, and completely glazed over, is in excellent proportion, and is most complete in its internal arrangements of galleries, staircases, &c.

We must now look at the pretty silvered glass globes, by Varnish and Co., which give a complete reflection of the vast building around, and of the multiplicity of busied living beings. Those who have often looked at the reflections of what is passing, in the great bottles in the windows of chemists' shops, will form some slight notion of the busy scene presented in these little spherical mirrors. They are well placed, and very amusing in their effect.

Messrs. Apsley Pellatt and Co. have produced some beautiful results in their attempts at reviving the character of the Venetian gilded glass. In a pressed plate they have also produced a very pleasing effect, and some of their cutting is exceedingly perfect in execution. A magnificent refractive cut-glass centre chandelier, 24 feet in length, and another in white, ruby, and blue glass, of the Alhambra style of ornament, well deserve the admiration they attract. Nor must we forget a large cut-glass chandelier for 144 candles, by Perry and Co., of New Bond-street, of great magnificence.

Among some more splendid specimens of Parian china, which again arrest the eye of the visitor, those by Minton, of Stoke-upon-Trent, Staffordshire, claim a word of commendation. We may especially notice a large vase, symbolically illustrative of hunting, and a superbly-decorated chimney-piece.

Suspended over our heads hangs the celebrated carpet presented to the Queen, and by her Majesty exhibited, which is the production of the leisure hours of a number of ladies, and is a good specimen of their industry and taste, in rivalling the finest productions of the continental looms. This carpet is 30 feet long and 20 feet wide, executed in Berlin wool, in 150 squares, from paintings of the full size, designed and executed by Mr. J. W. Papworth, F.R.S., B.A., and Mr. W. B. Simpson, decorator, Strand. Each lady, upon the payment of a guinea, had the material, and a square of two feet, sent her for execution. The square is composed of 340 stitches on each side. After completion the squares were returned, and fitted together as a whole. When finished, it was submitted to the inspection of her Majesty the Queen, before being placed in the Great Exhibition. The ultimate presentation to the Queen was decided upon by a majority of the executants, of 253 to 37. The projectors consider its value to be £800, but that, if worked by the loom, it could not have been sold for less than 1,000 guineas. They expect, by this example, to demonstrate that hand-labour can be employed better and cheaper than machinery in such articles of manufacture, and, therefore, open out a new field of industrial employment to those ladies who have encountered the reverses of fortune.

Alderman Copeland, of Stoke-upon-Trent, exhibits a collection of specimens in porcelain, which may vie with those of Dresden and Sèvres. The superb dinner-plates of every variety of pattern and border, the flagons and claret-jugs; the tassa, a beautiful vase, surmounted by three doves, taken from the celebrated "doves of the Capitol," is a particularly charming piece of china work. A pine-stand, formed of the foliage of the pine, and a bracket, designated as the ivy bracket, and an ewer and basin, in the Greek style, after Flaxman, are happy in their execution. "Ino and Bacchus," after Foley, will bear satisfactory comparison with some of the finer works of art with which the whole place is replete, and yields to but few of them in elegance and spirit. We must not forget four beautiful

chandeliers, in emerald, ruby, amber, and amethyst-coloured glass, which hang at four corners of the square above our head.

A fine vase, in Mason's ironstone china, claims some notice for its handsome design and proportions. Just glancing at Henderson and Witnell's carpets, we come to a beautiful group of the "Pleiades adorning night," by Rose, of the Coalbrook-dale China works.

Who does not remember Josiah Wedgwood, the introducer of porcelain manufacture into this country? who, could he but have beheld the results of his talent, his genius, his industry, and his enterprise thus richly rewarded by the manifestation of to-day, his genuine spirit would have been filled with joy and gratitude for the success of his exertions. Here, in the midst, stands the honoured name "Josiah Wedgwood and Sons, Etruria," the manufactures exhibited by whom, though excellent in many points, are but a shadow of what such a house ought to have been able to have produced, considering its bygone advantages. The jasper-ware is one of the leading features, and the cameos for which the original house was famous, are also shown. There are many beautiful statuettes; for instance, one of Hercules strangling the serpents, said to be the work of Flaxman, is of extreme beauty. Some happy imitations of the Etruscan style of decoration, displayed in cinerary urns, vases, ink-stands, and medallions, rival those of antiquity in their richness and gracefulness of form. We cannot feel surprised at the perfection to which Wedgwood rose in this manufacture, when we reflect that the talents of a Bentley and a Flaxman both lent their aid to the enlightened founder of this beautiful manufacture in England.

To Mr. J. Ridgway, of Cauldron-place, Staffordshire, we are indebted for a collection of articles, many of which exhibit much elegance, although they are, on the whole, rather useful than decorative. The fountain hand-basins deserve notice for their compact neatness, and a hand-rail for a staircase is novel in its construction, and susceptible of much elegance of decoration. A very handsome tea-service, of remarkably classic forms, some nice pieces of a dinner-service, and two very pretty fountains, which possess a charming coolness of appearance, all merit praise.

Worcester is one of those places celebrated for the great beauty of their former productions in china. In brilliancy of colouring it surpassed even Dresden and Sèvres, and fine specimens of old Worcester china are now rare and bring a very great price. Of late years, great efforts have been made to revive the ancient excellence of this manufacture, and some most beautiful articles are now exhibited by the Messrs. Grainger, of that town; amongst these there are an ewer and basin of very elegant design, painted turquoise ground, with rush-leaf handle and base, chased gold and burnished edges; tureens, with morone ground, handles designed from the leek, chased and burnished gold, and with mat blue ground and Dresden flowers in medallion; a *déjeuner* service and tray of egg-shape design, imitation honeycomb, traced in turquoise, with ears and leaves of wheat; a vase, intended for sauce, to which the design is highly appropriate, in representing the sauce as applicable to fish, game, and fowl—the fish being painted on the foot, the game hanging in relief from the sides; and the fowl appearing on the stopper.

Messrs. Chamberlain, of the same city, seek to keep up its ancient reputation by the products of their own house; and certainly,

for richness of effect, we have seldom seen a more satisfactory group. The tone of the whole display is full and harmonious, and many of the individual works are of high excellence.

We have now finished the North Gallery, having arrived at the point from whence we at first set out. We now cross over, and commence from the organ by Messrs. Hill, which stands in the South Transept Gallery, immediately over the south entrance. These well-known builders exhibit an organ without a case, in order to display the mechanical construction, which seems to be at once elaborate and ingenious. The stops, instead of drawing by handles, are regulated by pressing down keys, which run parallel to those on the manuals, so that a few touches of the finger can easily soften or increase the tone. It possesses good power, and both great organ and swell being enclosed in another swell-box, much additional expression is gained. Its stops are as follows:—*Great Organ*.—Double diapason CCC; open diapason CC; stopped diapason CC; octave; octave quint; super octave; sesquialtra; wald flute; cornopean; Krum horn. *Swell*.—Hohl flute; claribel; gems horn; tuba mirabilis; hautboy.

A mantle, woven in one piece, well deserves notice for its ingenuity. It has been purchased by her Majesty.

The small organ exhibited by Walker, merits notice, chiefly on account of the elegance of its case. It is very highly decorated, and the whole case is in fine oak, the front pipes being embossed after the old cathedral style.

CENTRAL SOUTH-WEST GALLERY, marked N in plan.—The splendid carpets which hang above our heads, as we walk along these galleries in the nave, will not be easily forgotten; but we think some specimens of the less expensive styles of carpeting would not have been out of place. The carpets here exhibited are obviously out of the reach, save of people of large fortune, and it would have been well could all classes have had an opportunity of testing the comparative excellence of manufacture displayed even in articles of humble price.

The rich antique damasks, and beautiful tartan plaid velvets, contributed by Campbell, Harrison, and Lloyd, and the famous collection of ribands of the most *recherché* patterns, by Sharp, Odell, and Jury, of Coventry; and Cope and Hammerton, ditto, are highly suggestive of pretty faces enclosed in pretty bonnets.

Mrs. Cornelia Mee, of Bath, contributes a most elegant banner screen, representing the flags of all nations, exquisitely embroidered in fine silks, held by a figure of Peace, modelled from the celebrated statue by Canova.

A beautifully-flowered carpet, decorated with various subjects, from a design by Elizabeth Rebecca Chambers, is most interesting as the united work of 115 ladies of Ireland. Of still greater interest is the motive which has given rise to this most creditable piece of "ladies' work," namely, the aiding of the Society for Promoting the Scriptural Education of the Native Irish, through the medium of their own language.

A full-sized black lace dress, and some other articles in the same graceful material, by Elizabeth Rose, of Paulesbury, deserve a word of praise. Greater admiration is exacted by the splendid chair, gilt and covered in ruby silk velvet, embroidered with gold, silver, and

jewels, contributed by W. Jacanowski, of York. The chief decorations are the Prince of Wales's feathers and the arms of the city of York.

An amusing collection of chess-men represents her Majesty's body-guard of gentlemen-at-arms, of very diminutive proportions, but dressed in the most complete manner imaginable. It is one of the most attractive objects in the gallery.

After looking at some rich laces, from Dublin, and Marshall's specimens of leaf-gold, of various quality and thickness, the groups of flowers, miniatures, and landscapes, in human hair, by Hanssen and De Koning are amazing specimens of ingenuity, and surprise us by the triumph of industry over materials so troublesome to manage.

A set of silver teaspoons, richly gilt, by Donne and Sons, deserve notice, as containing twenty-four neat engravings of the principal scenes in our Saviour's history. We are now entering upon the—

**WORKS IN PRECIOUS METALS AND JEWELLERY**, which surpass anything that could have been previously expected. It is, however, to be remembered, that many of our leading goldsmiths employ foreign workmen to a great extent, and consequently, several of the specimens here exhibited can hardly be regarded as the unaided efforts of Englishmen. Nevertheless, the show of plate and jewellery exhibited by us surpasses any display made by any other nation, and proves that the company of goldsmiths have lost little of their ancient wealth and enterprise.

We cannot, in our narrow limits, enter into minute descriptions, or even give rough sketches, of individual articles. A more general notice of those manufacturers who excel in this department, will be a better guide to the reader, and will do fairer justice to the exhibitors.

Keith's case contains some superb communion-plate, some of the chalices being richly enamelled, as well as gilt. Mr. Dodd, of Cornhill, has a beautiful silver tea and coffee service, decorated with *bassirilievi*, and some claret-jugs, that remind us of after-dinner and summer evenings. We must also give unqualified praise to a silver inkstand, the glasses of which are supplied by rich silver vases, while two Cupids, occupied in writing after the ancient manner, beautifully executed in frosted silver, support the corners.

Messrs. Rowlands, of Regent-street, exhibit a brilliant and ruby bracelet, in the Holbein style, which is, however, more curious than elegant. Some other rich antique bracelets are in the same case.

Emanuel, of Hanover-square, makes a rich display of dessert-stands, two of which, in opaque glass let into rich silver basketwork, are supported by clusters of vine branches, beneath which are Bacchanalian boys, with the panther, goat, and other emblems connected with the vintage of the ancient mythology. Two beautiful candlesticks, in natural crystal, forming glass columns, supported by groups of infant Tritons bestriding dragons, also deserve praise. Nor must we forget the splendid silver clock, by Woodington, with Titan and his steeds at top, the old classical illustration of the rising of day. Fine groups of figures, and a variety of rich symbolical decorations, adorn the rest of this most handsome piece of workmanship.

Messrs. Morel, of Burlington-street, are equally distinguished in this department. The most striking object is an equestrian statue of

Queen Elizabeth going to St. Paul's Cathedral to return thanks to God for the destruction of the Spanish Armada, taken from the bas-relief on the great seal of England under her reign. The height of this figure is 4 feet 2 inches, and its length 3 feet; it is embossed with the hammer, and presents a fine specimen of silversmith's work as practised in the 16th century, and lately to some extent revived.

The same manufacturers exhibit a centre-piece in silver, modelled and chased with great elaboration and taste, 2 feet high and  $3\frac{1}{2}$  feet long, weighing 1,260 oz. The subject is a troop of children playing with a panther; the scene a rock surrounded by water, slightly undulated. Branches of ornamental leaves spring from the sides, and terminating in a basket of flowers, form a sort of canopy over the group; twelve smaller branches spring out of the larger ones for candles.

We must also notice an immense table candelabrum, with the infant Bacchus surrounded by boys, who support the different branches. The saltcellars are very varied and ingenious, some of them representing panniers mounted on donkeys.

Mott's collection of ever-pointed pencil-cases deserves much praise for the elegance and variety of design which they display, and some praise is due to a silver knife and fork, each with a view of the Exhibition neatly engraved.

Attenborough, of Piccadilly, among other things exhibits an elegant agricultural prize cup, and branch candelabrum. But the finest things he displays are some cordage bracelets of pearls set in green enamel, the effect of which is elegant and striking; and there is a large collection of oriental agate, *lapis lazuli*, and cups set with gems, and mounted in gold and enamel, also by Morel, the shapes and chasings of which are exceedingly elegant and tasteful. The same house exhibits a large and magnificent bouquet, composed of diamonds and emeralds, prepared expressly for the Exhibition. The group consists of convolvuli and roses, the foliage being formed of emeralds, and the buds of rubies of enormous size. The design and workmanship are in the very best taste, and the value of this unique specimen of British jewellery is £15,000. There is also a very interesting display of Irish jewellery, in harps, fibulas, and other antique Irish ornaments.

C. F. Hancock, of Bruton-street, makes a very rich display. A group representing a knight attacked by a lion and a dragon is very spirited, and at the same time exquisitely chased. We must also notice an elegant little waggon, of highly Bacchanalian decoration, supporting two elegant liqueur-bottles. So pretty a contrivance deserves to be ranked with the ingenious "pass the wine" table, which we have described long since. In the same case is a hunting group, representing Queen Elizabeth and the Earl of Leicester, in massive silver, modelled by Baron Marochetti, the dogs being executed by M'Carthy. We must not forget a superb "cravate de drapeau," embroidered in gold on Pompadour velvet, designed and executed by J. Holbeck and Co. The celebrated Goodwood cup, won by Canezou, for Lord Stanley, representing Robin Hood contending for the golden arrow, with the Sheriff of Nottingham on horseback, and Little John on the foreground. A vase in open vine-work, of massive silver mounting, intended for Prince Frederick of the



Netherlands, well deserves commendation. An admirable tea service, in the early Florentine, and a cigar-box, valued at £600, must also claim attention; but a silver cigar-box must require a great enthusiast in smoking to feel any satisfaction at so purposeless a profusion; moreover, the decorations ought to be more illustrative of the purpose for which it is destined. The top of the box is inlaid with a bold sketchy water-colour drawing, of artistic execution, but of strength scarcely sufficient to bear the massive and glittering silver frame by which it is surrounded. A highly-coloured, highly-polished enamel is required, and would probably be supplied were the work completed for a purchaser.

Mr. J. Angell, of the Strand, supplies some nice things, among which we should especially notice a shield with engraved medallions of the twelve labours of Hercules, of the most animated and sketch-like execution. The battle at Issus, between Alexander and Darius, on another shield, is very splendid and effective, but scarcely equal to a somewhat similar representation of the battle of Arbela, which we have noticed among the Austrian collection. "Sir Roger de Coverley and the Gipsies" is a clever group, beautifully executed in silver, with much truthfulness and character; and some groups, representing Arabs halting in the desert, deserve great praise. We must not omit a clever copy of a picture by Wouvermann, and a most elegant introduction of rich enamel colour, in medallion-like masses, upon gilt vases and utensils. But a still more curious and interesting effect has been produced by Mr. Angell in his tea-service, illustrating fables from Æsop, in which may be traced in miniature the "Fox and the Grapes," the "Dog and Shadow," the "Wolf and Lamb," the "Lion and Mouse," the "Fox and the Crane," &c., all standing out in delicate relief from the body of the articles, and so contrived that the whole can be separated, and the articles used plain. The dead or frosted silver, of which these exquisite modellings are composed, is beautifully contrasted in effect by well-executed vignettes in line engraving, forming a *tout ensemble* of the most chaste and beautiful character. The turquoise enamel compartments applied to a tea and coffee service, marked as a completing specimen, are one of the most delicate effects we have seen produced in an article of plate, and the cost, we are informed, is not more than an elaborately-chased or engraved specimen. Mr. Angell certainly deserves praise more particularly for this introduction of enamel into large articles of plate, which had never been before carried out in the same way, nor upon so large a scale. A jug, 22 inches high, or a tea-service, enamelled, has not, we believe, been previously attempted, and the effect is pleasing beyond description; the eye, fatigued with wandering through a forest of candelabra and centre-pieces, finds agreeable change in these variegated and tasteful productions.

"Deer Stalking," represented at the critical moment known as "the death," is a group highly creditable to the taste and skill of M'Carthy, and is contributed by Messrs. Smith, Nicolson, and Co. The same parties also exhibit a candelabrum, with Bacchanalian figures and groups illustrative of the fine arts, by W. Beattie.

We must not forget the testimonial to William Charles Macready, designed by Messrs. B. Smith and C. Grant. Those who remember the late retirement of this long-cherished and well-deserving favourite

of the stage, will look with pleasure on the handsome testimonial which bears witness to his enlightened and vigorous efforts to raise the drama of Shakespere and the poetry of Milton to their proper level, to banish ribaldry from the stage, and substitute the higher attractions of the combined arts. The hero of the stage is represented as assisted in his study of Shakespere by the Muses presiding over tragedy and comedy. The tripod-like base of the whole is decorated with leading scenes from the plays of the great bard, exquisitely enchased in silver, and similar subjects occupy medallions carried out from the corners. The statue of Shakespere himself, to which the Muses are represented as pointing, surmounts the whole.

Of no less interest—especially in times when the bungling efforts of the half-dead cause of Popery have given an additional value to anything like advocacy of tolerance—is the testimonial presented to Alderman Salomons from the British Jews. The alderman is represented as appealing to Justice on behalf of his brethren, while Britannia is striking down Intolerance. The work possesses much merit, especially in the manly and graceful attitude given to the leading figure.

Chess-boards are *richly* abundant throughout the Exhibition, and few are more striking than the one sent by H. J. Eady, of Red Lion-street, Clerkenwell, representing Henry VIII. and Francis I. at the Field of the Cloth of Gold. When we reflect that Holbein, Titian, and other great artists, have furnished the designs from which these beautiful little figures are taken, we shall not be surprised at the excellent quaintness which they exhibit, or at their historical correctness of costume.

A curious casket, sumptuously worked in jewels, marked 105, the work of an English lady, deserves notice, before we lose ourselves in admiration at the display made by Messrs. Garrard. The superb necklaces, bracelets, and other feminine adornments, utterly defy description; while a most graceful candelabrum, in the centre of the first case, representing Arabs with their camels at a group of palm-trees, attracts great attention. It represents a well-known passage in Scott's "Talisman," which describes the halting of Saladin and Sir Kenneth at the fountain at the knot of palm-trees, and the spring which welled out from beneath their shade in sparkling profusion, "for some generous, charitable hand, ere yet the evil days of Palestine began, had walled in and arched over the fountain to preserve it from being absorbed in the earth, or choked by the fitting clouds of dust with which the least breath of wind covered the desert."

We must not omit noticing an ewer, designed by Mr. Cotterell, as deserving of special notice. It represents the eighth labour of Hercules,—the destruction of Diomedes, king of Thrace, who, in order to render his horses more fierce in war, was said to have fed them on the flesh and blood of his captives. On other parts of the vase are emblems of the seven previous labours of Hercules. On the body are the heads and skins of the Nemæan lion, the Erymanthian boar, the Menalæan stag, and the Cretan bull; and on the neck the Stymphalides. The handle is formed of the Lernæan Hydra. The foot represents the cleansing of the Augean stables, through which Hercules turned the course of the river Alpheus.

A spirited representation of Richard Cœur de Lion near Ascalon,

deserves much praise for the vigour and energy it displays, as well as for the beauty of its chasing; and the same praise is equally due to the group representing the trick of catching wild horses with the "lasso." A cup, in the form of a nautilus-shell, and a very bold and artistic representation of Sioux Indians hunting the bison, are not a whit behind the rest.

In Messrs. Garrard's next case there is a capital representation of the "knight of the rueful countenance" introducing the duchess to the Princess Micomixicoma. Messrs. Garrard's collection of jewels, though not so extensive as that of Messrs. Hunt and Roskell, will be found to contain some gems of great beauty and purity. The suite of opals set with brilliants, consisting of necklace, stomacher, ear-rings, and bracelets, has some of the largest fire opals ever seen in this country; the suite of sapphires, which are also embellished with pearls and diamonds, are of extremely fine water, and the rubies very magnificent. Among the other superb specimens of jewellery in this case, is a tiara in large brilliants, enriched with fine oriental pearl drops and boutons, and large diamond drops of the purest water. A bracelet of very tasteful design, representing water nymphs bringing a pearl from the deep, the shell being enriched with emeralds and brilliants, and the gold-work elaborately chased. Another bracelet, of Gothic design, with angels holding a ruby and pearl, the emblems of purity and affection, is enriched with enamel and chased gold-work. There is also a pendant, after the antique, with figures in the style of Benevenuto Cellini, enriched with rubies, brilliants, and pearls.

We shall next notice a beautiful enamelled gold vase, with portraits of her Majesty and Prince Albert, contributed by Messrs. Seymour, of Gerrard-street, Soho. A fine group of Lucy of Lammermoor, and "in at the death," is very worthy of notice. The shield presented to Thomas Brassey also deserves praise for its variety of design and beauty of execution. A lump of Californian gold, weighing 18 lbs. 3 oz. 8 dwts., is a natural curiosity, highly interesting to adventurers in quest of this modern "philosopher's stone." We may mention, not by way of comparison, but contrast, the fine group of Marlborough at Blenheim, just after.

From the old firm of Storr and Mortimer, now ably represented by Hunt and Roskell, great things were naturally expected, and those expectations have not been disappointed. The contents of their case embrace a work in silver, showing its application to sculpture, combined with metallurgical art; a shield, embossed and chased in silver and iron; vases, presentation-plate, centre-pieces, candelabra, dessert-stands, cups, salvers, tazzas, caskets, &c., with designs, &c., by Alfred Brown, A. Vetch, Sir G. Hayter, Frank Howard, Sir F. Chantry, E. H. Bailey, J. G. Crace, H. Armstead, J. Haslem, and Winterhalter; watches and chronometers, of extraordinary construction; carriage and other clocks; specimens of the various precious stones in the rough and wrought state, among the most interesting of which are some pearls of immense size, embedded in the oyster.

We cannot do much in the shape of pointing out all particular specimens amongst this really superb collection of objects, but we must attempt to describe a few of the most prominent of them.

A silver centre-piece and plateau, richly decorated with ornaments

of the cinque-cento period, affords an instance of the high capabilities of silver in its application to sculpture and decorative art. This ornament is adapted as a stand for flowers by day, or a candelabrum at night. The groups at the corners represent the four seasons. Flora, attended by nymphs, and playing with flowers and a lamb, personifies Spring. Zephyrs bearing on their shoulders a male figure, crowned with ears of corn, and bearing a sickle, represent Summer. Autumn is represented by Bacchus, with Silenus and Pomona; and Winter by the aged Saturn, who, seated on a leafless tree, draws his mantle over his shivering form. The base of the centre-piece is adorned with figures representing the four quarters of the world, each accompanied by appropriate animals. The *alto rilievo* around the column represents Day and Night, attended by the Hours; and around the stem which supports the base are four figures representing the Elements.

We would next call attention to a shield, composed of iron and silver, the subjects embossed bearing reference to Shakespere, Milton, and Newton. Shakespere is represented seated in a vessel of immortality, floating on the river of life, attended by Apollo and Minerva. Genii of poetry support tablets inscribed with his writings; an eagle, about to soar, indicates the lofty flight of his genius. The seven ages of man are impanelled on the vessel. On the iron border are subjects from "Hamlet." Milton is represented dictating his poem of "Paradise Lost" to his daughter, inspired by Religion and Poetry. Couched behind the shield is Satan. Beneath the boughs of the tree is shown our first parents' disobedience, the serpent coiling around the stem, and a group of angels flying towards Paradise. On the border is the battle between Abdiel and Satan, the angel Raphael cautioning our first parents against their enemy, and their expulsion from the garden. The third medallion represents Newton reclining on a globe, contemplating the wonders of the heavens. Behind are figures of Time, Truth, and Wisdom, rebuking Ignorance and Superstition. The Earth is represented instructing her children of Europe, Asia, Africa, and America; and above, in faint relief, is the system of attraction he propounded, and the sun with the planets revolving round it. The border represents the accident which led Newton to the discovery of the laws of gravitation, and the incident connected with the invention of the prism. Between is Genius in a chariot, tracking space. Surmounting the medallions, in the centre, is the Genius of Arts and Sciences.

Another fine piece of artistic work, exhibited by the same firm, is a testimonial in silver, presented to Sir Moses Montefiore. The sphynxes indicate the captivity of the Israelites in Egypt; the figures represent Moses and Ezra, the great deliverers of their people. A Jew of Damascus is represented in chains, and another released. Beneath these are appropriate texts in Hebrew, overshadowed by the vine and fig-tree. The group on the summit of the work represents David rescuing the lamb from the jaws of the lion; the *bassi rilievi* represent the passage of the Red Sea, and the destruction of Pharaoh's host. Lawless violence in the world is typified by wolves devouring flocks. Sir Moses and Lady Montefiore are represented landing at Alexandria and obtaining a *firmá*. This fine piece of work has been modelled from a design by Sir George Hayter.

A splendid centre-piece, representing Asia crowning Britannia, on

pedestal of Indian architecture, with palm-trees at the angles, will not be overlooked. The treaty of Nankin, and views of Calcutta, Agra, and Canton, are represented in bas-reliefs; figures of Affghan and Chinese captives and a British Sepoy complete the group,—the whole being supported by recumbent elephants.

Another interesting object, exhibited by this firm, is a silver cup, the last work of that kind superintended by Chantry. It was presented to Charles Kemble on his retirement from the stage. The piece appositely represents the seven ages,—the figure of Kemble, in his favourite family-part of Hamlet, being placed on the summit.

A testimonial is also exhibited which was presented to Mr. Lumley, the director of her Majesty's Theatre, modelled and designed by Mr. Brown. The figures upon this work of art represent Melpomene, Thalia, Terpsichore, and Euterpe.

It is well known that when the Emperor Nicholas came to England, a few years since, people were unexpectedly prepossessed with him. He certainly could not have done a more popular thing than appear in the light of a judge and a patron of the turf. Every one will be delighted to behold the magnificent shield, in silver, given as a prize by this prince, at the Ascot races of 1848. This work bears a fitting place in an Industrial Exhibition, representing, as it does, the principal incidents in the life of Peter the Great. In the centre, Peter is represented triumphing over Ignorance, Vice, and Envy. The six compartments, divided by figures of Victory, represent as many incidents in the life of the czar. One exhibits his deliverance from the insurrection of the Shillitz; and in another he is represented working as a shipwright in Deptford dockyard; another represents the foundation of St. Petersburg; another celebrates his clemency at the taking of the Neva; the fifth represents Catherine and Peter at the battle of Pruth; and the sixth represents the czar crowning Catherine as empress.

Our limits forbid further description; but we must briefly refer to the statuettes of the Duke of Wellington, after Count d'Orsay, and of Napoleon. Nor can we pass over an excellent group, forming a testimonial presented to Thos. Williamson, Esq., by inhabitants of Bombay, as revenue commissioner and secretary, and a spirited representation of St. George and the Dragon (a favourite subject with our English goldsmiths). The jewellery defies description; but the collection of precious stones, in their rough state, forms an interesting and profitable study, as well as a dazzling delight to the eye.

We will just point out the magnificent diamond bouquet, in the centre of the case, the flowers composing which are the anemone, rose, carnation, lily, &c., all modelled from nature. The ornament is divided into seven different sprigs, on elastic stems, each most perfect in design; and the complicated flowers can be separated by a mechanical contrivance. It contains nearly 6,000 diamonds, the large ones weighing 10 carats; and it would require 1,000 of the smaller to weigh one carat. Above it is a large enamelled portrait of her Majesty, in gold, by Haslem, after Winterhalter. The portrait is surrounded with a wreath of oak, enamelled in pure gold, set with pearls and diamonds. Near this is a novel and beautiful ornament for the head, composed of branch coral connected by leaves of enamel and gold, enriched with brilliants. Several brooches and bracelets

in enamelled gold, set with diamonds, to represent flowers, and an enamelled portrait of the Queen in gold, set as a bracelet with carbuncles and diamonds, are of the most gorgeous character, and display great skill and taste in the arrangement. Earrings in emeralds, diamonds, and carbuncles, after the marbles from Nineveh, indicate the introduction of a new style of ornamentation, and show an activity in adapting art to the progress of antiquarian science highly commendable.

Messrs. Harvey and Co., of Regent Street, exhibit, among many excellent things, some fine communion-plate, and a richly-gilt model of Westminster Hall, the fidelity of which is only surpassed by its richness. We must not omit their magnificent candelabrum; the base of which is triangular, and composed of shell-work, marine plants, and water issuing through apertures formed about the ornaments, and losing itself in shells placed to receive it. On the angles are three principal figures,—Venus seated upon a shell, exhibiting the golden apple; a syren playing upon a harp, and another entwined in a net and presenting strings of coral to Venus. On the stem, in a spiral form, is a young Triton crowning Venus with a wreath of pearls; upon the summit, surrounded by marine plants, is Cupid. Springing from the upper part of the stem are three branches, each for two lights, composed of seaweeds and shells; the whole forming a marine composition of the utmost elegance and classical accuracy.

Messrs. Wheeler and Co., of Bartlett's-buildings, Holborn, make a good show of thimbles, vinaigrettes, and other pretty, ladylike trinkets.

Phillips, Brothers, of Cockspur-street, present some delicately-finished models of soldiers in complete uniform.

From Messrs. Gass, of Regent-street, we have a silver dessert-service, of novel character and design, modelled from nature from water-plants in Kew Gardens. Each leaf is so contrived as to support a weight of 6 lbs. We also notice a beautiful christening cup, with figures by Redgrave, a silvered jewelled dessert set, in Elizabethan style, and an emblematical brooch, in the style of jewels of the cinquecento period. The carbuncle and diamond bracelet, with portraits of her Majesty and H.R.H. the Prince of Wales, after Thorburn, executed in niello, engraved by J. J. Crew, is curious, which is all that can be said of the silver gauntlet niello bracelet, designed by Maclise.

We must next say a word for a beautiful silver centre-piece, representing Egyptian carriers at a well, and an embossed and chased salver, representing the well-known "Aurora" of Guido, by Mills, of Somers-town. Above our heads are some superb Axminster carpets, which, like those of Messrs. Jackson and Graham, and Lapworth and Riley, are too large and too beautiful not to attract the notice of visitors without much trouble in pointing them out.

We must say a word of praise for the Sheffield plate and Britannia metal works, which, for beauty of execution, and sometimes of design, rival the works in real silver,—a great comfort for those who, like poor Traddles, in "Copperfield," can afford Britannia-metal when silver is wholly out of the question. The specimens exhibited by Messrs. Padley, Parkers, and Staniforth, by Messrs. Dixon and Son, of Sheffield, and Harrison, of Sheffield, will reconcile many "per-

sons about to marry" to the advantages of an accessible substitute for an inaccessible reality.

Talking of Sheffield, it would be horrid injustice to forget Hayball's beautiful oak cabinet, with Pallas and her Ægis in the centre, and a superb walnut cabinet, by Hoyler. Both are highly creditable specimens of the successful working of the Sheffield school of design.

Mr. Collis, of Birmingham, exhibits a superb solid silver table-top, 55 inches in diameter, weighing nearly 900 ounces, made for Mahmed Pacha, the governor of Aleppo, and a capital collection of medals. Some candelabra, and other rich ornaments in silver, cannot fail to attract attention.

A few Irish contributions in this department are good enough to make us wish for more. Passing Connell's excellent specimens of carvings in Irish bog-oak, Bennet, of Dublin, who exhibits a sumptuous masonic ark of the covenant, by an Irish artisan, deserves attention. We certainly regret that the Irish specimens in this kind of work are not more numerous.

Messrs. Elkington and Co. deserve high praise for their electrotype-plate goods. The excellent imitation of chasing shows a perfect command of the material, and makes one rejoice to see so much elegance produced at an outlay admitting of extreme moderation of price. Among the many specimens they exhibit, we may especially mention a vase commemorating the triumph of science and industrial art, as developed in the Great Exhibition. It is in the rich Elizabethan style, and is adorned with various statuettes. Prince Albert is placed on the apex, and around the body of the vase are representations of Shakespere, Newton, Bacon, and Watt. "It is only within the last ten years," observes an able writer in the *Times*, "that this new metallurgic art has been practised. The electro-chemical discoveries on which it is based were not made until 1839-40, and some years elapsed before they gave birth to anything that deserved the name of manufacture. Within a few years, however, this manufacture has made immense progress, more especially in the hands of Messrs. Lyons and Elkington, who have obtained by it a world-wide celebrity. Before this, the art of attaching a surface of precious metal to the baser metals, consisted in soldering a plate of gold or silver upon a thicker plate or bar of copper or iron, and submitting the compound mass to the rolling process. It is evident that this process would not be applicable to mouldings and chasings, and these were accordingly made solid in the precious metal, or stamped hollow in the precious metal and filled with some baser fusible metal. By the present art, the most fine, elaborate, and artistic workmanship may be expended on an article fabricated in any of the baser metals. This article, being either cast or chiselled, or submitted to both these processes, may then, by the electro-metallurgic art, be coated with gold, silver, or platinum, or with each of these metals on different parts by the electro-metallurgic process just mentioned, without impairing in the slightest degree its artistic excellence. These processes have, as may be imagined, completely revolutionized the art of the silversmith and goldsmith. It is not, however, in gilding and plating alone that these processes are useful; they are equally applicable to the production of artistic objects of solid metal."

Some fine bronzes, including a massive statue of Geoffrey, earl of Gloucester, in complete armour, and some admirable clocks, will not

prevent our looking at a couple of splendid Scotch rams' heads, each mounted so as to furnish a snuff-box and cigar-case. They are exhibited by Messrs. Baird, of Glasgow, and McGregor, of Perth.

Messrs. Lister and Sons, of Newcastle-upon-Tyne, furnish a capital collection of daggers, pistols, and other arms, superbly jewelled.

We now come to a collection of clocks, time-pieces, and other implements connected with "times and seasons," which will possess great interest with those skilled in such matters, but of which no intelligible description can be given. A superb clock by Walker, of Princes-street, of the most finished and ingenious workmanship, from a design by Mr. C. Grant, is adorned with subjects in the panels embossed by Mr. G. Abbott. The case, which is electrotyped, consists of a base and a pedestal of turquoise-blue glass, surmounted by figures indicating the progress in the civilization of England. It is illustrated by seven subjects revolving at the base:—1. The savage life of the ancient Britons. 2. The Roman Governor introducing agriculture. 3. The encouragement given to Flemish weavers to settle in England. 4. The introduction by Caxton of printing. 5. The improvement of the steam-engine by Watt. 6. The opening of the Liverpool Railway. 7. The Great Exhibition. The clock shows the hours and minutes on an open dial supported by upright figures. The signs of the zodiac are made to represent the months, and seven subjects embossed in silver, *fac-similes* of those on the pedestal, have been grouped so as to be seen at one view.

Another, by Moore, deserves equal praise for its superb decoration, but the Lilliputian watch, by Funnel, of Brighton, will attract much more. This little piece of mechanism is only the size of a silver three-halfpenny piece, is perfect in all its parts, and goes 28 hours at one winding. So exquisite a pet piece of bijouterie rivals the many ingenious attempts on the continent of a similar character.

Howell and James exhibit some handsome or-molu clocks, one of which represents Jupiter presiding over all things, Apollo and Diana, with their chariots and horses, indicating Day rising from Night, and sinking under the horizon. The twelve Hours of the Sun are dancing, and on either side Spring and Autumn are represented strewing flowers upon the earth.

A clock by Thorneloe, of Lichfield, representing the cathedral of that city, is ingeniously contrived to strike the quarters, and go 32 days. A Gothic skeleton clock, by the same maker, also deserves notice.

Mr. Funnel's Lilliputian watch is rivalled by a diminutive eight-day clock, by Cole, of Pentonville; and a skeleton clock, by J. Lamb, of Bicester, constructed to go 400 days, is well worthy of approbation.

After Rotheram and Son's case of watches, we come to Mr. Dent, who, not satisfied with his monster clock in the nave, exhibits a noble collection of chronometers and other instruments, which do full credit to his great reputation, in this department.

A collection of watches by Jones, of the Strand, are ingeniously displayed by being placed on a revolving pedestal, which presents them in succession to the eye of the spectator. We must particularly notice one of them, which obtains a dead beat of the seconds hand, with a single train of wheels. In the measurement of minute divisions of time, it has been considered a matter of some importance



to make the seconds hand indicate at once, and distinctly, each second as it passes, which cannot be done with the quivering beat of a common hand. To effect this object, a second train of wheels has been hitherto employed; but Mr. Jones contrives to dispense with this encumbrance, which tends to make the movement irregular, and in the gold watch exhibited, the dead beat is obtained by an alteration in the escapement of a single train.

A skeleton clock, 2 ft. 4 in. in height, which goes three years without winding up, comes from Mr. Pace, of Bury St. Edmunds. This is obtained by six powerful springs, the united force being equal to 250 lbs. weight. They are enclosed in six barrels or boxes; three are connected with chains to a fusee on the right hand, and three on the left. The power is thus concentrated in the pinion on the second great wheel, and is conveyed up the train of wheels and pinions to the pallets, which are connected with the pendulum. The power is here reduced to a few grains; but is quite sufficient to keep the pendulum in constant motion. After the clock is first wound up, the chain unwinds from the smallest part of the fusee, three turns of which allow the barrel to revolve once in 210 days. This is said to be the slowest motion ever produced. It registers the day of the month, the number of weeks and years it has been going since it was last wound up. From the same place, there is a barometer, of unique design, in highly-polished brass, containing three glass tubes, supported by scroll-work. The centre tube is the barometer, and those on each side move an index, which rise and fall, by turning a nut at the base of the stand. At the same time, by means of wheel-work, they turn the hands that are on two dials, one for night, and the other for day, indicating the state of the barometer. The science of meteorology has derived immense advantages from the invention of self-registering instruments, by means of which the variations that occur during every moment of the day and night may be correctly registered, without the necessity of having attendants constantly watching. Some very ingenious instruments of this kind, which have been tested by use in the Royal Observatory, at Greenwich, are exhibited by Charles Brooke, Esq., of Keppel-street, their inventor. The variations in the declination and dip of the magnetic needle, the variations of temperature, and of the state of moisture of the air, and the variations of atmospheric pressure, may, by these means, be correctly registered without any trouble, and after the lapse of several hours, the observer, on going to the instruments, finds recorded on paper all the changes that have taken place during his absence. Photography is the operating agent in these records, and its application for this purpose affords a striking illustration of the influence which discoveries in one branch of science have in advancing others with which they would seem at first to have little connection. The art of taking portraits and views by the agency of light, has apparently no connection whatever with the science of meteorology, yet it has proved a most valuable assistant in meteorological observations, by presenting the means of obtaining correct registers of the changes that are continually occurring. In the instruments invented by Mr. Brooke, the application of photography to record the rise and fall of the mercury in the thermometer, affords the clearest illustration of the mode of operation. A plate of metal, in which there is a

very narrow slot, is placed over the tube of the thermometer in such a manner that the mercury completely obstructs the passage of the light so far as it ranges; but the light passes through the upper part of the slot. At the back of the tube there is a vertical cylinder, which revolves by clock-work once in twenty-four hours. This cylinder is covered with photographic paper, which is kept moist by a glass cover. As the cylinder slowly revolves, all the upper part of the paper where the light passes is darkened, and the lower part, being protected from the action of light by the mercury, remains white. Thus if there were no change in the temperature, the division between the dark and the light parts of the paper would present a straight horizontal line. If the mercury fall by diminished temperature, then a large space is exposed to the light, and if it rise, the dark portion of the paper is diminished; thus the mercury, by acting as a screen from the light, serves to indicate on the paper the heights to which it has risen and fallen during the revolution of the cylinder. During the night the photographic effect is produced by the rays of a lamp reflected on the tube. Mr. Brooke's instruments for registering the variations of the magnetic needle are somewhat more complicated, but they are equally effective, and depend on the same principle. The apparatus is kept in the dark, and the rays of a lamp are concentrated by a concave mirror on to an horizontal cylinder, covered with photographic paper, and protected from evaporation by a glass. The small mirror is attached to the magnet the declination of which is to be recorded, and, when any deviation takes place, the small flame of the lamp, reflected to a focus on the cylinder, assumes a position more or less westerly, in consequence of the inclination given to the mirror by the deflection of the needle. The register is in this case made by lines drawn on the paper by the photographic agency of the concentrated flame.

Dr. Merryweather, of Whitby, exhibits a tempest-prognosticator, invented by him, who states that he has forwarded to the President of the Philosophical Society notices of impending storms for the last twelve months. These notices are filed, and the inventor appeals to them as the vouchers of the accuracy and value of his invention. Similar notices have also been forwarded to Lloyd's, and which we are informed are now posted in the reading-rooms of that establishment.

Among the many "varieties" of this department, is a musical clock, with automaton figures, by Marchand, of Red Lion-street, Holborn. Russell and Son, of Liverpool, Smith and Son, and many other makers, exhibit a number of clocks, possessing various claims to the attention of the scientific. Few are more curious or complete than the one by J. Briscall, of Constitution-hill, Birmingham. It corrects itself, goes a month, shows the month, and day of the month.

**WESTERN GALLERY.**—The centrifugal machine, illustrating planetary motion, by Bateman, LL.D., F.R.A.S., is a most ingenious contrivance, and attracts great notice. The same may be said of a vertical orrery, by Facy, of Wapping Wall. Naysmith's maps of the moon put us in mind of Baron Munchausen's amusing trip to that planet.

We have a famous collection of models of ships in this department, but before we come to them we must direct attention to Constable's pretty model of the battle of Trafalgar in wood. The constructor

commenced the work in March last, by forming the hulls first, and next fixed the bolts for the rattlins. He then fixed the decks on, and mounted the guns, which took him a long time. Next, he made 146 anchors, the figure-heads, and the rudders, the ornamental work on the sterns and cabin windows being the most tedious task. The rigging is of thread, most skilfully arranged. The frame 7 feet long and 3 feet wide. Each ship has her anchor dropped; and there is a buoy attached, which appears to float; and these buoys are marked with numbers corresponding with the card of reference. The ships can be put in motion; so as to show Lord Nelson's mode of attack on the combined fleet off the Cape of Trafalgar. The number of ships is 73; and each ship carries the proper number of guns and her naval trophies.

Having before noticed Willis's organ, we shall turn to our left, and notice some good stained glass by M. A. O'Conner, and to some rich bishops' vestments, and altar-cloths, in a case, by Laud.

Among the beautiful models of ships which surround this part of the building, we must especially notice one of the Royal Sovereign, by Peter Pett, of Woolwich; one of a 74-gun ship, of the time of Lord Nelson; as well as another of the steam-ship *Phoenix*, by Turbull, of Whitby, Yorkshire. Both are admirably done.

To those interested in the antiquities of ship-building, the model of the *Harry Grâce de Dieu*, built in the reign of Henry the Eighth, 1514, will present an object well deserving attention. Along the walls are a number of longitudinal sections, calculated to show the way in which the form of a vessel varies according to its number of guns. Opposite are some horizontal sections, showing the complete internal arrangements between decks. One in particular, of the *Vanguard*, is a most beautiful piece of work.

Harvey, of Cumming-place, Pentonville-hill, sends some smaller models of the *Victoria and Albert*, and *Fairy* yachts, finished in the most exquisite manner. Beside them are some Lilliputian boats of the most refined diminutiveness, though perfect in every detail.

SOUTH-WESTERN GALLERY, marked O in plan.—Mr. Wilkinson makes a satisfactory display of guns, and gun equipments, especially in the shape of two monster muskets. Some lay-figures just opposite, dressed in rough uniforms, with the view of displaying some new arrangements for hanging knapsacks, will certainly amuse. Their maudlin wax faces remind us of the intellectual-looking figures placed at the doors of cheap "clothing warehouses" in the Lampstead-road, to set off a smock-frock and corduroys of extra cheapness.

The guns, by Lang, Haymarket; Boss, St. James's-street; and Needham, Piccadilly, exhibit various efforts of ingenuity. The latter manufacturer exhibits a self-loading specimen of these wholesale destructives."

Shaw's India-rubber air-gun, Goddard's protector gun, and the safety gun," well deserve attention. The latter implement is thus described:—

"It is the registered invention of M. Hoskins, of Frith-street, Soho, and the advantages of its construction are,—1. There is no internal machinery, and no strength of the gun cut away; 2. On withdrawing the side nail, the safety comes off with the locks; 3. The action is

outside entirely, and any obstruction is instantly to be perceived; 4. The safety lever, being over the hand of the gun, it is not interfered with in carrying the gun; and is operated on by the grasp of the hand, only when being raised to the shoulder; 5. The gun cannot be fired from any other than its legitimate position, viz. full cock; 6. There is no wear and tear, for, from whatever position the hammer may fall (unless when at the shoulder), it is instantly caught by nose of dog entering one of the bents in hammer; 7. Either lock may be used when the other is in safety position."

The other invention presents a singular combination of the elastic powers of vulcanized India-rubber and air. Without any previous pumping, the requisite pressure of air for one discharge is procured instantly at the pull of the trigger, by a single stroke of a condensing syringe, actuated by a previously extended India-rubber spring. There is no separate pump, no reservoir of condensed air, nor valve of any kind. The whole apparatus is enclosed in a case, which, being stocked, has the appearance of a light and elegant fowling-piece without a lock. The invention possesses several advantages over the ordinary air-gun, one of which is its superior safety, owing to the absence of a large reservoir of highly-condensed air, and to the extreme simplicity of its mechanism. The air which expels the ball is powerfully compressed at the moment of discharge by a piston acting within a cylinder, and moved with great force and rapidity by the sudden contraction of a spring composed of a number of vulcanized India-rubber rings previously extended by hand in a very simple and easy manner; and the ball is propelled with a force quite equal to that exerted in the common air-gun, and with this great advantage, too, that the force exerted is always the same.

Mr. Hart, of New Canal-street, Birmingham, claims the praise of being able "to make any gun shoot well, however lightly or heavily charged, by means of a newly-invented machine. By this invention, a single shot of any gun-charge, fired at the distance of forty yards, will appear upon an iron target the size of a fourpenny-piece; or, in its progress, a single corn of shot will go through a penny. This proves the velocity with which the charge is propelled, and will kill at either sixty, seventy, or eighty yards' distance." Several specimens illustrative of this "out-and-out" bombarding will interest both sportsman and soldier.

Although it is not much to the purpose of our present conversation, we must not forget the elegant carpets of Messrs. Lapworth, some of which are displayed about this neighbourhood. More, however, to the purpose, and well worthy of careful inspection, are two models—one by Fergusson, of Langham-place, showing eight different modes of fortification on a new system, and the other, by H. Davis, representing no less a building than the Tower of London after the calamitous fire which destroyed the grand armoury. It is a pretty, compact, and well-coloured model, and will interest the admirers of this genuine stronghold of the city of London.

With our taste for the natural *versus* the artificial, we must beg our reader to look, and look carefully, at the superb collection of mosses and sea-weeds, of every form and hue, arranged with exquisite taste by Holt.

Messrs. Gillow and Co., of Oxford-street, display a portion of the mammoth log of St. Domingo mahogany. Speaking of woods, we

have little doubt that our cabinet-makers will more and more perceive the many beautiful woods which might be adapted to the formation and decoration of household furniture, which have hitherto been neglected. The immense variety of woods displayed throughout the Exhibition ought to give several good hints on this subject, of which we doubt not they will take advantage.

We have several times remarked the ability displayed in forming artificial flowers out of most eccentric material. Here we now find some vegetable flowers! *i. e.* flowers cut out of pieces of carrot, &c. by Pursey, of Spring-street, Sussex-gardens. These must not be confounded with the decorations stuck by pastry-cooks on a tongue at a wedding-breakfast; on the contrary, they are natural, soft, flexible, and graceful.

A tremendous collection of specimens of woods, and some illustrations of the action of creosote, or oil of tar, in preserving ship-timber from the inroads of polypi. Barclay's candles, of famous dimensions, are too big to pass unnoticed.

The outermost wall exhibits some capital specimens of table-covers, by White and Son. Straight's specimens of turning, especially a set of chessmen, in the dress of the Crusaders, are very ingenious and pretty.

At the top of the staircase is a splendid show of velvet damask, by Swainsland and Crayford, Kent, and some velvets from Ireland, of great richness.

A great South-Down ewe, rich in shaggy fleece, dull, stupid, and as dirty as the happiest sheep could desire, will attract the eyes of the farmer, and make the Protectionists' mouths water. It is stuffed, was seven years old, and was never shorn. Its length of wool is 25 inches, its weight 36 lbs. It certainly does much credit to the sheep-management of Mr. J. Moore, of Littlecott Farm, Pewsey, Wilts.

Near it Mr. Bruch, of Sewardstone-mill, Woodford, exhibits an interesting series of the substances and combinations used in the process of dyeing, also colours used in oil-painting and printing in various states, and with abundant illustrations of their application.

Along the wall facing the outward windows are some curious specimens of ingenuity, in the shape of table-cloths wove in mosaics of cloth. One of them contains 250 figures. Different forms—legs, arms, coats, hats, &c., are cut out of various coloured cloths, and let into a dark ground of the same material. As a work of taste, they are ridiculous, but to deny them the praise due to persevering industry and patience would be most unjust. We must step a little to the right, and smell the coffee, which is delicious, and look at a pig, preserved whole, by Smith, of Dublin. It looks very greasy and nasty, but, as a pig, we don't doubt its excellence.

After a pretty show of needle-work, contributed by Messrs. Harris, of Watling-street, Morrell's display of goose-quills, pens, and other writing implements, want a word of commendation.

Crossley and Son, of Halifax, make a truly magnificent display on the outer wall in this department. For a long extent it is covered with the most exquisite tapestry, either in the form of carpets, rugs, table-covers, or other furniture. The brilliancy of the colours, the exquisiteness of the design, and the neatness of the finish, must give Messrs. Crossley a place among the very first and most successful of the exhibitors in this department.

Messrs. Fortnum and Mason, of Piccadilly, have taken care not to lose their old-established reputation for the purveying of nice things. The only annoyance is, that the contemplation of *pâtées* and preserved fruits is painfully suggestive of the pleasure to be derived from their more solid enjoyment.

The "solidified milk" is certainly a great curiosity. Imagine a pound of this dripping-looking stuff containing four quarts of wholesome pure milk.

Among the most interesting specimens of natural productions in the whole Exhibition, is the valuable collection contributed by Messrs. Gibbs and Co., of Piccadilly, consisting of numberless dried grasses, seeds, wheat, barley, &c., admirably arranged, preserved, and labelled, so as to form an excellent study for the naturalist or the farmer. The gardener-like precision with which they are set out, is not the least commendable feature.

After looking at the collection of Scottish timber, which, for variety and excellence, must surprise even the experienced in these matters, we must direct our readers' attention to the large compartment filled by the tasteful industry of Messrs. Lawson and Sons, of Edinburgh. Every vegetable product of Scotland, whether calculated for food, chemical operations, medicine, manufactures, or building, is arranged here with a purpose and good sense hardly to be surpassed. We must unhesitatingly give the palm to Messrs. Lawson in the *arrangement* of such objects, and (though it is almost invidious to draw comparisons among things possessing so infinite a variety of excellence) we must say we have seen nothing like it in the whole Exhibition.

We always admire "ladies' work," especially when it is unconventional. Such is truly the work exhibited by Mesdames Blackburn, Ward, of Coleraine, and Mrs. H. S. Roome. The views, representing Lincoln Cathedral, and some other scenes from nature, are not needlework, but absolute copper-plate drawings! Never was imitation more perfect and more creditable.

The chemical specimens from Glasgow are highly creditable. But our readers have now seen so many monster crystals of alum, sulphates of iron and copper, so much potash and soda in every condition, so much of medicine in general, from the highest refinements of strychnia, aconitina, and morphia, down to the most common-place medicinal field herbs, that we must be convinced that little profit will attend any minute discussion. It is enough to observe, that a few glass bottles in this department contain concentrated poison sufficient to destroy all the visitors to the Great Exhibition, past and present.

After looking at some superb needlework by Bradbee and Sons, of Newgate-street, we come to a richly-embroidered and tapestry-worked state-bed and hangings, including almost every description of ornamental needlework, exhibited by Messrs. Faudel and Phillips. In viewing the bed from the foot, the nearest subject is the celebrated "Aurora" of Guido, in the Rospighoso Palace at Rome. This foot-board has been transferred to the canvass directly from the picture, without any portion being made into a Berlin pattern, set in a square design, or any other mechanical contrivance for simplifying or facilitating canvass-work. It is in "tent-stitch," on fine canvass. All the wool has been split, and to obtain many of the

ints it has been found necessary to twist two single threads of different colours into one, 700 shades having been used. The number of stitches is estimated at upwards of 1,600,000. The tester, or head-piece, is worked in cross-stitch, Gobelin-stitch, and raised-stitch, in wool, afterwards sheared, silk twist, and chenille. The centre is copied from Thorwaldsen's "Night," direct from a model, without the intervention of a squared design; and it is stated by the firm that this is the only attempt to use statuary and other fine arts as patterns for needlework. The *basso rilievo* is suspended from a wreath of flowers, selected from all nations, tied together by laurels, palms, and myrtles, emblematical of peace. The fruits and bread-stuffs of the world united are in raised work at the sides, and copied from Raffael's ornaments in the Loggie of the Vatican, but grouped so as to be appropriate to the present subject. The scroll is of the same character as the bedstead, and into the whole of the design no less than fifty-one different flowers, fruits, and products are introduced. The upper hangings are entirely in silk chenille, manufactured in Spitalfields, representing, on a flat surface, the folds of velvet draperies, supported by worked cords, and a garland of poppies, emblematical of sleep. The ceiling and cornices have been designed by M. Briteaux. The subject is angels watching and holding wreaths of roses over the sleepers. The curtains are of white watered Irish poplin, with blue satin strips worked in silk crochet-cord made purposely; the design so arranged as not to show any joint. The dimensions of each curtain are 12 feet by 9 feet. The cover, or counterpane, is a junction, as it were, of all the parts. The sides are made to correspond with the hangings and the tester. The pillows and bolster are in gimp, which, together with the fringes, are made in the manufactory of Messrs. Faudel and Phillips. The canvass and every other material used are of British manufacture. The whole has been designed, arranged, and worked under the superintendence of the exhibitors, in their own workroom upon the premises. Thirty hands have been employed on the needlework alone during a period of eight months. The bedstead itself is carved and richly gilt in the style of Louis Quatorze, and is, independent of the tapestry, a most beautiful specimen of fine art applied to furniture.

Among the many beautiful works in Berlin wool, we must notice one piece, of great beauty, by a blind exhibitor, M. A. Gardner, a "Last Supper," elegantly embroidered in the same material.

The Fine Arts Department, in respect to pictures, is but inadequately represented, as we have before observed; but we cannot forbear directing well-merited attention to three paintings by Carmichael, painted in colours prepared with H. L. Pattinson's newly-discovered oxichloride of lead.

An ingenious chemical contrivance for printing bankers' cheques in such a manner as to detect any attempt at forgery or addition, well merits notice; and the same praise is due to some pictures painted in a semi-transparent colour made from the smut of corn!

We will now carry our reader back, reminding him that he is supposed to have paid but one visit to the leviathan collection of the world's weal, and exhorting him' (if he have any doubts on the subject) to go again, and again. We have done our best in pointing out what seemed *to us* most worthy of especial remark; but we must also bid him think for himself,—and think not lightly, and as if

everything he has seen were a distinct object, but with care and comparison, looking to the grand struggle of intellect and perseverance against the difficulties of material and circumstances. Above all, let him remember that the greatest curiosity of the whole Exhibition is the unanimity of principle by which this vast mass of great works has been brought together,—that the greatest lesson to be learned from them is the capability of mankind to gain power by combination, which individual excellence may sometimes only destroy.

But we are not quite clear of the Exhibition even now. A few objects OUTSIDE must receive a word or two of notice before we part from our readers.

To say the truth, they are not very numerous or individual in their character. Immense masses of coal—one of them, contributed by Haines and Son, of Staffordshire, raised from a depth of 165 yards by the ordinary steam-engine, and weighing 13 tons; and another, sent by Barrōw, of Derbyshire, raised from a shaft 459 feet deep, and weighing 24 tons, are decidedly the “lions” of this department. Various samples of artificial stone, by Farse, of High-street, White-chapel; of Portland cement; some monster grindstones, sent by Bedford, Benson, and Co., near Barnsley,—one of them 8 feet in diameter, and 14 inches thick; specimens of limestone, marble, rough serpentine, gypsum, and numberless other masonic specimens, together with some monstrous anchors, by Fox, Henderson, and Co., are extremely attractive; but we remarked, on all occasions, that people are in too great a hurry to reach the internal contents of this gulf of the world’s treasure, to care much about those on the outside.

For the sake of geological readers, we must not forget a pillar of great height, representing the different working seams as they exist in vertical section. It is, in fact, a noble column of South Staffordshire coal, contributed by Messrs. Bagnall and Gesson, of West Bromwich, near Birmingham, firmly fixed in a stout wooden frame.

The Baron Marochetti’s colossal equestrian statue of Richard Cœur de Lion, placed at some distance from the western end of the building, is a bold and spirited production, but wants individuality.

We shall conclude with a description of the gigantic electric clock which is placed in the centre of the arch of the transept, fronting the Kensington-road.

Time in the Crystal Palace is regulated by several electric clocks, of large dimensions, made by Mr. C. Shepherd, of Leadenhall-street, on the improved plan recently invented by him. The largest of these clocks, which we are now describing, is as novel in the appearance of the dial and hands as in the interior arrangements. The diameter of the dial is not less than 24 feet, but is only a semicircle, for it was found that a complete dial of that size would detract from the appearance of the building. Mr. Shepherd had the option of having a circular dial of 7 feet diameter, but that he considered would be too insignificant for the purpose, and he preferred the larger dial with its semicircular proportion. There is not, indeed, any clock face, such as we are accustomed to see, but the hours are painted in compartments, on the arch of the transept, the Roman numerals appearing white on a blue ground. The twelve hours are



included in the semicircle, beginning with VI on the left hand, ascending to XII at the top of the arch, and descending to VI on the right. That the hands may indicate the time at all hours of the day and night, they are made double, so as to point both ways; thus when the hour-hand has arrived at six in the evening, it moves off the dial on the right, and the opposite end of the hand becomes the index to the hours. In the same manner, the opposite end of the minute-hand recommences its duties as index every hour, and then again passes off the dial. In the intermediate times, the double part of the hands, though of no use in pointing out the hours, serves the important offices of equipoises and counteracting vanes, to equalize the force of the wind; for, without some such provision, the wind, acting on a lever 10 feet long, might have impeded the action of the clock, or have caused irregularity. The length of the double minute-hand is about 20 feet, and that of the hour-hand 16 feet, being made of gilded copper. In addition to this monster clock, there are two electric clocks, with circular dials, 5 feet in diameter, placed inside the eastern and western entrances, and other smaller ones in different parts of the building, all of which are of similar construction, and are all in connection with, and regulated by the same pendulum.

The distinctive feature of Mr. Shepherd's electric clocks consists principally in the mode of giving impulse to the pendulum. In the electric clocks previously constructed, the pendulum at each vibration touched a metal stud in connection with a voltaic battery, and by that means communicated instantaneous but temporary magnetism to a coil of wire enclosed within the bob of the pendulum, and caused it to be attracted by a combination of permanent steel magnets placed within the sphere of attraction. The impulse to the pendulum was consequently derived from repeated magnetic attractions; and, as voltaic batteries are constantly liable to variation, the movement of the clocks varied accordingly. In Mr. Shepherd's arrangement, the impulse is given to the pendulum by a spring, and the electromagnetic power is employed only to relieve the pendulum from the action of the spring during the return of vibration. By this means the impulse is altogether independent of the varying power of the battery, and the action is constantly the same. Another part of Mr. Shepherd's improvement consists in the mode of giving motion to the hands, which are made distinct from the pendulum, and thereby another cause of irregularity is avoided. The pendulum is, indeed, detached completely from the mechanism, its sole use being confined to regulate the passage of the electric currents. An ordinary second pendulum, of the size used in an eight-day clock, is all that is necessary to put in action the largest electric clock, and a pendulum of that size is employed for working the great clock at the Crystal Palace, and all the other clocks in connection with it. The detachment of the different parts of the same clock from each other, yet the connection that exists between separate clocks at considerable distances apart, constitute a remarkable feature of the invention. The pendulum may be hundreds of yards from the clocks it regulates, the striking parts may be placed as far off from the dial, yet the connection between twenty of such clocks is so intimate that they will all respond instantaneously to the vibration of a single pendulum, and move invariably together.

The mechanism of the clock, a view of which is given, is fixed in the south gallery of the transept, at about 48 feet below the centre of the dial, and motion is communicated to the hands by means of a rod made up of several lengths of brass tubing screwed together, and of  $1\frac{1}{2}$  inch in diameter. The clock frame is much lighter than usual, as the ordinary heavy weights are entirely dispensed with. There are two wheels within the frame, placed vertically—the escape wheel, to which the power is applied, of 10 inches diameter, and a larger or central vertical wheel, of 18 inches diameter, working into the pinion on the arbor of the escape-wheel, which is in two parts, the teeth of each part being placed in opposite directions; on one part the click and ratchet escapement acts, being moved by the electro-magnets, while the teeth of the other part are employed to lock the train, and prevent it running forward from the action of the wind on the hands. The large wheel revolves once in two hours, the spindle of which projects beyond the frame, and carries a bevel wheel of 12 inches diameter, placed vertically, which revolves with it. In order to give motion to the vertical rod already described, the bevelled vertical wheel works into a second bevelled wheel placed horizontally; and above the first, on the axis of the horizontal bevelled wheel, the vertical rod or shaft revolves; and by means of wheel-work at the top of the shaft, the hands of the clock are also made to revolve.

The whole is kept in motion by a series of powerful electro-magnets, eight in number, on which is wound a total length of 25,000 feet of copper wire, of the size usually denominated “No. 18, Birmingham wire gauge,” the weight of the wire being nearly  $1\frac{1}{2}$  cwt. Six small batteries of Smee’s construction are used in connection with the electro-magnets. Mr. Shepherd prefers Smee’s battery to any other, on account of its simplicity, and the ease with which it is recharged when required.

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### SUPPLEMENTARY NOTICES.

RUSSIA—It happened unfortunately for ourselves and our readers, that the rich display of articles contributed by Russia was not arranged at the time of our visits. The necessity of quickly publishing the present *brochure* has therefore compelled the editor to insert a brief supplement relative to the Russian collection.

The single room on the south side of the nave is devoted to articles possessing little individuality, but nevertheless demands some notice.

Passing through an avenue of gold, silver, and vari-coloured silk and satin brocades, which almost make us believe that the glowing East, with all its paraphernalia of magnificence, has suddenly found its way into the chilly precinct of Peter the Great, we come to an interesting case of rich military clothing and decorations, ornamented in gold and needlework. Next comes a famous collection of wool, shaggy, dirty, smooth, and clean,—in short, forming, under all circumstances, a most grotesque contrast to the rich, glossy cloths which line the sides of this department. Bulwer somewhere says, that the goose that is roasted alive, in order that its liver may contribute to

a *pâté de foie gras*, ought to feel thankful for the honour of being compelled to form a *morceau* so delicious. Really, if sheep; and goats could come to life again, they ought to feel pleased at seeing so much good and handsome use made of their skins.

Just before we plunge into the collection of skins, dressed and undressed, and natural productions, a word in favour of the curious collection of tea-caddies, desks, boxes, washing apparatus, &c. &c. &c., by Theodore [Bardoffsky, of St. Petersburg, made out of—not gutta percha—not calico—not *papier-mâché*—not French gelatine—but felt and hare's fur!!!! *Quidlibet de quolibet* is a true saying, after all.

The natural produce is not by any means contemptible, although scarcely up to what might be expected. The chemical preparations are but scanty, and the geological specimens do not seem calculated to do high credit to the Russian universities. We must, however, remember that several difficulties, the weather among others, have interfered with the ready transit of Russian produce. We Englishmen, who are always grumbling at the weather, can feel for them.

Russia is not "soft in war," and her show of cannon-balls, and other bombarding articles, keeps up her credit in this respect. There is also a very decent show of iron in other forms of preparation, not, however, up to that of Sweden.

Among a lot of useful productions, in the shape of candles, tapers, &c., some isinglass in the raw state, strongly suggestive of *blanc mange*, at that exciting and interesting period of an evening party,—the supper, will set several young ladies' heads wandering from greater things in the Exhibition. The cartilage of some fish, with a famously-awkward Russian name, is very curious. If it is meant to eat, we have our doubts.

To the weak class of young gentlemen, who cannot smoke much, we expressly recommend the collection of cigarettes in this department. These ingenious arrangements of tobacco in a paper tube really look very nice. Lola Montez might be tempted to break the glass case, and afterwards stiletto the policeman in attendance for interfering.

We will now cross over, and come to the full blaze of Russian magnificence which the large court appropriated to this country presents.

The articles contained here are by no means numerous, but for value, they vie with many of the richest displays in the Exhibition. We shall enter on the left hand side, between two splendid candelabra which we have already noticed.

The walls first display a capital collection of handsome swords, cutlasses, and other weapons, below which are some fine quadrants, and a most complete collection of mathematical and philosophical instruments. A massive brass breastplate will attract attention, as many other things do, by its size, and the picturesque appearance of a Caucasian felted cloak, bearing the name of Bourka, contributed by the Commission of Odessa, well deserves inspection.

After looking at a tolerable display of table cutlery, F. Rosinsky's artificial leech claims the attention of the scientific. This ingenious invention, under circumstances when the natural leech is not to be obtained, deserves to be hailed as a real improvement in surgical knowledge. Many leading practitioners in our own country have

hailed it as an invaluable introduction. Nevertheless, in our infinite love of humanity in general, and of our readers who buy this book, in particular, we wish they may have no occasion to employ it.

Looking at the specimens of paper-hangings, which are nothing particular, we come to a superb cabinet in *marqueterie* work and gilding, with porcelain medallion paintings, which is particularly beautiful. It is delightful to see how porcelain, and other delicate materials, are rapidly becoming subservient to comparatively ordinary purposes of decoration. Just past this are some specimens of coloured and decorative papers for fancy-work, but hardly equal to the French or German specimens.

On the side facing the nave stand the doors—the doors—worth the small sum of £6,000 sterling. If such are the doors, what must the room come to? They are formed of malachite, and its brilliant green, resembling a rich watered-silk, with its exquisite polish, is heightened by the dead and burnished gold of the panellings and ornaments. But we have not done with malachite yet.

Some admirable specimens of inlaying and mosaic work in wood successfully outrival the similar efforts in the Austrian rooms. Two superb silver groups, one of Ruben's "Descent from the Cross;" the other representing various scenes from our Saviour's life, with the Crucifixion in the centre, the whole in a bold relief, with arabesque-gothic borderings, and some fine medallion castings, contributed by Count Solsten, Vice-President of the Imperial Academy at St. Petersburg, will not allow us to forget a simple cast in bronze, of the head of Peter the Great. Passing through an exhibition of Russian magnificence, we can ill forget its founder. This truly artistic cast is the work of Chopin.

Another dazzling candelabrum salutes us as we return into the nave. It is in the style of Louis XV., and is a dazzling mass of exquisite porcelain and gilding. The lower portion is prettily converted into a flower-stand, in which a plentiful supply of geraniums imparts a degree of freshness and nature to the more dazzling efforts of the artist. Near it is a handsome clock, interesting for the ingenious representation of the first balloon ascent, taken from the original of Cleodion, and modelled by Chopin.

In the middle of the room, near this part, is an ebony cabinet, designed by Baron Clott, who stands high among the Russian artists. On the top is a bunch of grapes, in amethyst, modelled in such a manner that, as the light falls upon them, they seem to show the very juice of the real fruit. They are set off by a sprig of mountain-ash, represented in coral. On one end is a bunch of currants, in white cornelian, in which the artist has contrived to place the very stone of the fruit inside. These are so deceptively true to nature, that H. R. H. the Prince of Wales, who is probably as fond of fruit as any more plebeian juvenile, said, "He should really like to eat them." On the opposite end are bunches of cherries in red cornelian, and on the other side plums and pears in onyx and agate.

Amongst the other sumptuous articles in malachite (some specimens of which, in the natural state, are exhibited in the opposite room), we must mention two large cases, standing at the sides of this compartment, respectively valued at £1,500 and £3,000 a-piece; a mantlepiece, in the earlier and less ornamented Louis Quatorze style, with the fender, hearth, fire-back, and grate, in bronze gilt and

burnished gold, with a table and chair on either side of the same material. A brief notice of the malachite, or carbonate of copper, can but prove interesting.

This beautiful material is found in the copper-mines of Siberia and the Ural Mountains, and has also been found in the Burra-Burra mines, in Australia. The specimens here exhibited are contributed by Prince Demidoff. The manufacture is itself a work of art; for smooth as the surface appears, it is made up of a multitude of variously-shaped little pieces, carefully selected to form particular patterns, the fitting of which requires the most minute exactness. For instance, in the doors above mentioned, there are probably twenty thousand or thirty thousand pieces embedded in cement,—this cement being itself formed of malachite. The doors themselves are formed of wood covered with copper, and the layer of malachite is about one-fourth of an inch in thickness. The vases exhibited, of similar material, have a basis of cast-iron, three-fourths of an inch in thickness.

Three real jasper vases, on the side near the grand candelabrum, one of which is 3 feet 6 inches in height, display immense ingenuity, taxed severely by the hardness of the material, are the property of the Emperor, and were made at his own manufactory at Katrinburg.

A grand porcelain vase, in the centre of this department, is a favourable specimen, and proves that the Dresden manufacturers will one day feel the competition of the Imperial Manufactory at St. Petersburg. It is valued at £2,500.

We shall close our account of Russia with a notice of the plate and jewels. The latter, which are under the same surveillance and the same press of crowd as the misnamed "Mountain of Light," occupy places within an iron railing, at either entrance of this department. They are of immense value, and are contributed by M. Bolin and M. Kammerer, both crown jewellers at St. Petersburg.

The plate which fills a large case on the right from the nave, is contributed by M. Sizikoff, of Moscow. We may particularly observe a candelabrum, containing 200 lbs. of silver, illustrating a memorable incident in Russian history. The Duke de Merti, Grand Duke of Muscovy, in a violent engagement with the Tartars, in the year 1380, fell, severely wounded by a blow on the head from a hammer. The duke, surrounded by his body-guard of knights, lay beneath a tree, faint, and apparently dying; but a soldier of his army galloping up with the welcome news of victory, the duke revived, and was himself again. It is invidious to draw comparisons, but good as this group is, there is too much that is better in the opposite English gallery to allow it to stand very high.

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Before we take leave of our readers, we will put them in mind of a few more things, which they may or may not have seen, but may, perhaps, wish to think of again.

In the transept, are two articles of maritime interest, lately introduced. One is, we think, the largest ship-model in the Exhibition, representing the *Queen*, a 116-gun ship. It is handsome, natural, and complete,—all that a model can be.

To those "gentlemen of England," who little know the "dangers of the sea," we earnestly recommend the fragment of a main-topsail, torn to shreds, and twisted in the most extraordinary way, during a hurricane which seized the *Trafalgar* off the Isle of France, March 21st, 1851. We never saw a sadder or more suggestive illustration of the terrors of the deep.

Just opposite the "Amazon," in the Zollverein department, is a new display of china, by M. and L. Schuster, of Saxony. Among the exquisite specimens exhibited, is a camelia, rivalling the one in the "octagon room;" and a set of tea-things, covered all over with dainty little white flowers, of the minutest delicacy and chastest style of decoration.

Just at the Holland entrance, Mr. Hope's magnificent jewels claim notice. Among the most remarkable, we may specify a hand of solid pearl, weighing 1,800 grains, being the largest pearl known in the world; some noble pearls, embedded in the oyster; a superb rough amethyst, from Transylvania; the handle of Murat's sword, composed of one massive beryl; a large crystal of primitive precious beryl, from Siberia; and two large emeralds, scooped out to form the body and cover of a vinaigrette.

Between the compartments appropriated to Holland and Belgium, the Duke of Devonshire's Hawk, literally a mass of rubies and other precious stones, and valued at £40,000, attracts attention, more, we presume, from its sumptuousness, than its artistic beauty.

We may conclude with recommending our readers not to forget the ingenious model of Messrs. Pipelin's works for artificial fuel, which is placed in the nave, in the front of the French department; nor the superb elephant trappings, in the Indian department. In fact, India is much improved since our first notice; and the palanquins, carriages, and trappings exhibited in the present collection will be good illustrations of many a fairy-tale of the East.

We will now bid farewell to our readers, hoping that our little volume may act not only as a tolerably patient and faithful guide, but as a pleasant remembrancer of the many delightful things they have seen and admired in their pilgrimage to the Hyde Park Pantechnicon.

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